NOVEMBER 25, 1923

THE RUBBER AGE

VOL. XIV. NO. 4

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THE RUBBER AGE

The Only Twice-a-Month Rubber Publication

VOL. XIV. NOVEMBER 25, 1923 No. 4

HIGHER CRUDE RUBBER PRICES PREDICTED

Dwindling Stocks with no Increase in Crude Hubber Production Will Mean Higher Prices in 1924 According to Estimate—Demand is Expected to be Large Next Year

The surplus stocks of crude rubber in this country are expected to drop to normal by the close of the current year. In view of this it is predicted in the trade that prices soon will be higher. The heavy stocks of rubber which piled up in this country following the deflation after the 1920 boom were responsible for the downward trend of prices throughout the greater part of this year. The trade now is giving serious attention to the amount of crude rubber available for consumption next year and the requirements of manufacturers.

Increase In 1924 Prices

An advance in prices "can have no immediate stimulative effects on production because new plantings can affect supplies only six years hence," says the *Standard Daily Trade Service,* New York. "On this basis a rather sharp advance in crude prices is indicated for 1924. The advance, however, will depend on the revival of demand, and may be somewhat slow."

Tire manufacturers in this country, according to the review, stocked heavily with crude rubber in the early part of this year. They became overstocked, and consequently the price trend in rubber has been continuously downward since last February, subject to a slight recovery in August and September but followed promptly by an October reaction which carried the quotation down to the lowest level of the year.

Increase in Price in Past Year

In September, 1922, before the English export restriction began to have its effect on prices, crude rubber was selling at 14½ cents a pound. By February of this year the average price advanced to 35½ cents a pound, the recovery being due to the restriction of exports from producing territory rather than to improved demand.

While it is expected that by the end of this year rubber stocks will probably have been reduced to normal, the carry-over of tires probably will be somewhat above normal. American consumption of rubber this year will total from 275,000 to 300,000 tons; world consumption approximately 400,000 tons. The United States accounts for about 75 per cent of the world consumption, while the automobile industry accounts for about 82 per cent of our domestic consumption. The world productive capacity at present, if prices pushed it to its practical limit, is probably not far from 450,000 tons. Computing 75 per cent of capacity as within the restricted area—337,500 tons—and assuming that only 60 per cent of this capacity is permitted for export, only 202,500 tons of plantation rubber of the English area will be available, together with possibly 100,000 tons from exterior sources.

"Higher prices are then in prospect irrespective of the coming expansion in the demand for tires," says the review. "Two and one-half million more cars will be in use next year than this, and from three to three and one-half millions of new cars will be equipped. Trade Service's forecast is, therefore that rubber prices will advance rather sharply next year. The revival of demand is, however, likely to be slow until the new requirements of the manufacturers approach nearer to maturity and until the next year's general prospect gets further clarified. Nevertheless the market should become gradually firmer." (*N. Y. Times*)

EFFICIENCY IN SALVAGE

Out at the Goodyear plant they don't let any waste get away which might be turned into money. In most rubber plants the salvage cans throughout the factory are of two kinds: one for rubber scrap and the other for all other or miscellaneous scrap. After being collected the material is sorted and divided into groups for easy disposal.

This however means a great deal of work—and a lot of waste. At Goodyear they overcame this waste by having cans provided for paper, rags, bottles, etc., thus obviating the necessity of burning nearly the entire contents of the "miscellaneous" can. The result has been a large saving in sorting labor and a steady revenue from the bales of paper and rags.

CURTAIL PRODUCTION SAYS TIRE EXECUTIVE

Overproduction Has Resulted in Ruinous Competition Says an Executive of a Tire Plant—Merchandizing Costs are Too High and Too Many Original Equipment Orders Are Detrimental

In a statement attributed to an executive of a leading tire factory issued by the *Boston News Bureau,* tire manufacturers are warned against the many evils which have resulted in such poor financial statements for this year. He states that the competition of mail order houses is getting stronger and that too much money is spent on the merchandizing of tires. Those manufacturers who accept large original equipment orders at cost or at a loss are also attacked. The statement follows:

"If ever there was an industry in this country that needed complete reformation it is the manufacture of automobile tires. A few years ago it used to be the popular banking comment that the motor industry was the most wasteful and uneconomic in its practices, but to my mind that unenviable distinction now falls to our own.

"For admittedly there is tremendous overcapacity in the tire industry and must be for years to come, whereas the big automobile producers hit peak for months at a time. Even with the sharp curtailment that will get under way in the next fortnight the production this year of 46,000,000 tires will be greater than the country will absorb and yet potential output is close to 60,000,000 tires.

"Instead of recognizing the folly of ruinous competition the various companies continue manufacturing at a loss instead of curtailing vigorously. Red ink figures now prevailing everywhere could be avoided with common-sense.

"The inroads that mail-order houses and department stores are making into the legitimate business ought to be recognized. It is a common occurrence for a mail-order house to take the entire output of smaller companies located in various sections, guaranteeing the manufacturer's credit. These tires, with freight charges and excessive distribution costs eliminated can be merchandised very cheaply.

It is the distribution costs that are the plague. Outdoors advertising is running beyond legitimate bounds. One of the

(Continued on Page 122)

ENDICOTT JOHNSON WILL MANUFACTURE OWN HEELS

Plans for the manufacture of a substantial portion of its requirement for rubber soles and heels have now progressed to such a point that the Endicott Johnson Corp., Johnson City, N. Y., recently announced that they will shortly be making 10,000 pairs of soles a day in addition to the 10,000 pairs of rubber heels which they have been producing for some time.

The company's requirements are in the neighborhood of 70,000 pairs of heels a day and it is estimated that if they decide to make 100% of their requirements it will take fully a year to install the necessary equipment and organize the plant. That the company will go ahead and make such plans is very likely for they have been making rubber heels for some time and their experiments have shown them the feasibility of producing a heel of good quality at a price much lower than is possible to obtain from outside sources.

This is the first time that a shoe manufacturer has begun the manufacture of any of the accessories used in its products and other manufacturers are watching this effort very carefully.

J. W. Matthaei is superintendent of the new rubber heel factory Mr. Matthaei has been connected with the company since September, 1922, when he conducted experiments in connection with the rubber sole and heel development.

Mr. Matthaei has had 25 years' experience in the paper and rubber industry. For 10 years he was one of the leading pulp and paper manufacturers in Germany. For 15 years he was connected with the rubber heel and sole departments and laboratories of the United States Rubber Co., and the Armstrong Cork Co.

Goodyear Not to Buy Curtiss

Officials of the Goodyear Tire & Rubber Company have denied that they are interested in the purchase of the Curtiss Aeroplane & Motor Co., Inc. A rumor to that effect had been making the rounds and it was given credence in many quarters on account of the recent advent of Goodyear into the airship line when it purchased the Zeppelin rights.

Large Plant for Springfield

It is announced that a large rubber factory will be operated in Springfield, Mo., for the manufacture of tires, tubes and mechanical rubber goods. The name of the company is the Missouri Rubber Products Company, capitalized at $500,000. The plans call for a concrete, frame and brick building, 280 x 90 ft.

Northern Rubber Found Solvent

The Northern Rubber Co., at Barberton, Ohio, which recently took over the Biltwell factory has been found solvent and in no need of a receiver according to Judge Boylan who investigated the finances of the company following a petition presented by C. K. Swigart. Claims of amounts due and that a number of suits were to be filed against the company were found to be untrue. In turn the company is suing Swigart for $50,000 declaring that his claims had embarassed the company's business standing.

Wishnick-Tumpeer Moves N. Y. Office

The Wishnick-Tumpeer Chemical Co., of Chicago, importers and dealers in chemicals, oils and colors for the rubber trade announce the consolidation of their New York office and warehouse so as to better serve their customers in the Eastern territory. They have taken a building in the Bush Terminal, Brooklyn, known as Independent Store No. 26 at 130-44th St. Telephone numbers are Sunset, 0206, 1090, 7417.

Arrangements are being made to carry ample stocks required by the trade. David Tumpeer, secretary of the company, is in active charge of this office and E. A. Johnson, formerly of the National Aniline & Chemical Co., is in charge of the rubber division.

Receivers Want to Continue Business

Charles E. Stokes and Gaston Tisne, receivers in equity for the Bergougnan Rubber Corp., Trenton, N. J., have applied to the U. S. District Court for the District of New Jersey for authority to continue the business of the company for a further period of three months.

The receivers pointed out that under their management, manufacturing operations have resulted in a profit of $3,746 and 100 new dealers have been added.

E. J. Hathorne

Edward J. Hathorne, for many years prominently identified with a number of rubber companies, died at the age of 69, on November 8 in New York City. Mr. Hathorne was formerly assistant treasurer of the United States Rubber Co., and a director and officer in a number of the U. S. subsidiaries. He was treasurer of the Rubber Goods Company at the time this group of factories was incorporated in the U. S. system.

The officers and directors of the U. S. Rubber Co., sent a suitable floral token and the following acted as pall bearers: Frank J. Saxe, George H. Mayo, John D. Carberry, Samuel Norris, Wilson H. Blackwell and John W. Macomb.

Mr. Hathorne is survived by his widow, Mrs. Georgia M. Hathorne.

Hubbell Plant in Operation

It is reported that the tire factory of the Hubbell Rubber Co., at Zanesville, Ohio, has now started production and is turning out about 100 tires daily. Officers are: Chas. C. Hubbell, Pres.; Ed. C. Shaner, Vice-Pres.; E. E. McCloud, Sec.; J. C. Rehl, Treas.; F. H. Jackson, Factory Manager.

CURTAIL PRODUCTION SAYS TIRE EXECUTIVE

(Continued from Page 121)

big companies is reported to have spent recently $750,000 on a single billboard campaign. Some of this selling expense is warranted; the worst evil is that it stimulates a noticeable spirit of competitive spending.

"One of the worst and better known evils is the reckless acceptance of automobile equipment orders at less than cost. Up to 25 per cent capacity this 'original equipment' business is worthwhile for most companies in making possible heavy production and lowered costs, but too many concerns are prone to reach up above the danger line; when normal consumer demand slumps only the unprofitable line is left."

Graphic Statistics Issued Monthly

The Rubber Association has just issued the second graphic presentation of monthly tire statistics for the month of September. The first issue of these figures in the present form was made last month and the reception given these records for August by the rubber industry warranted the association in making them a regular monthly service, to be issued on the tenth of each month.

Tire Production Increases

The beginning of November saw announcements in Akron that the Firestone and Goodyear plants would increase tire production. It was reported that Goodyear increased its tire production from 22,000 to 25,500 and its tubes from 34,000 to 36,000 a day. No figures were issued by Firestone. This increase in production resulted in the employment of a number of additional workers and is the first indication of normal production in preparation for the Spring, 1924 trade.

Fire at Black Hawk Plant

A fire in the bead room of the Black Hawk Tire & Rubber Co., Des Moines, Iowa, recently caused a shut-down of the plant for a few days. The fire did a damage amounting to $15,000 which was covered by insurance.

New Rubber Factories

J. R. Bailey and H. W. Limert of Akron, Ohio, have incorporated the Akron Rubber Mat Co., to manufacture rubber mats and stair treads. For the present these products will be manufactured under contract under the supervision of F. Goslin, formerly with the Star Rubber Co. A plant will be erected later.

It is announced in North Kansas City that the Dean Rubber Co., will build a plant to manufacture rubber toy balloons, hot water bottles, etc. The plant is expected to be ready for operation in February.

FISK RUBBER ISSUES FINANCIAL STATEMENT

Reports Gross Sales of $41,826,601 for First Nine Months of 1923—Net Profits are $3,741,823–Surplus Increased to $5,631,172—Total 1923 Sales Will Exceed $50,000,000.

The Balance Sheet of the Fisk Rubber Co., Chicopee Falls, Mass., as of September 30 shows net tangible assets of $40,532,379, after deducting all liabilities and reserves except the $9,000,000 First Mortgage Bonds outstanding on that date. The amount of net tangible assets per $1,000 bond was $4,504 of which over $2,820 was in current assets.

Current assets were reported on the same date as $25,380,000 compared with current liabilities of $5,354,000, leaving a balance of over $20,000,000 as working capital and a current ratio of approximately 4.7 to 1. The net current assets exceed the amount of First Preferred Stock outstanding by more than $1,000,000.

Sales for the first nine months of 1923 were $41,826,601. Net earnings available for interest were reported as $3,741,823, or more than three times the actual deductions for interest and financing charges for the period.

After deducting all charges and setting up reserves for federal taxes and other contingencies, the net profit carried to surplus for the nine months amounted to $2,103,000, bringing surplus at end of the period to $5,631,000. The complete statement is given on this page.

Davol Rubber to Build

A permit for the erection of a three story brick manufacturing plant was recently granted to Mary E. Davol in Providence, R. I. The new building, 115 x 170 feet is to be erected on South Street and is to be an extension of the Davol Rubber Company factory.

Fire at Reclaiming Plant

The Akron plant of the Philadelphia Rubber Co., was damaged to the extent of about $10,000 by fire recently when an overheated dryer caused a fire in the boilerroom. Damage was covered by insurance.

Goodrich District Managers Meet

A three day meeting of District Managers was recently held at the Goodrich plant in Akron. It is reported that plans for 1924 were discussed.

Fisk Rubber Company Financial Statement

Profit and Loss and Surplus Account
For Nine Months Ended Sept. 30, 1923

Gross Sales, less returns and allowances		$41,826,601.
Cost of Sales, including depreciation, selling and administration expenses		38,084,778.
NET OPERATING PROFIT		$ 3,741,823.
DEDUCT		
Interest Paid net	$989,279.	
Amortization of discounts, etc.	83,097.	
Premiums and commissions on bonds purchased for retirement	33,276.	
Stamp tax assessment for issue of Common Stock	33,493.	1,139,145.
Net Profit after interest and financing charges		$ 2,602,678.
Appropriation for reserves for Federal Taxes and other contigencies prior to 1921		500,000.
Net Additions to Surplus for the Period		$ 2,102,678.
Surplus Dec. 31, 1922		3,528,494.
BALANCE SHEET SURPLUS SEPT. 30, 1923		$ 5,631,172.

Comparative Balance Sheet

Assets

	Dec. 31, 1922	Sept. 30, 1923
Current Assets		
Inventories	$13,520,790.75	$14,244,817.19
Acc'ts & Notes Receivable less reserve	9,082,096.53	7,635,536.43
Cash in banks, on hand and in transit	2,495,733.18	3,499,635.48
TOTAL CURRENT ASSETS	$25,098,620.46	$25,379,989.10
Capital Assets		
Land, buildings, machinery and Equipment depreciated	$17,615,236.57	$17,740,582.30
Goodwill	1.00	1.00
Investments	3,928,215.93	3,956,590.12
Liberty Bonds held in trust		153,016.98
Treasury Stock	49,354.75	
Deferred Charges	1,564,710.68	1,758,772.91
TOTAL ASSETS	$48,256,139.39	$48,988,952.41

Liabilities

	Dec. 31, 1922	Sept. 30, 1923
Current Liabilities		
Loans Payable	$ 5,135,000.00	$ 3,185,000.00
Accounts Payable	1,761,578.64	2,108,700.03
Accrued Bond Interest	253,333.34	60,000.00
TOTAL CURRENT LIABILITIES	$ 7,149,911.98	$ 5,353,700.03
First Mortgage 20-year 8% Sinking Fund Gold Bonds	$ 9,500,000.00	$ 9,000,000.00
Reserve for Insurance Liability Assumed by Company	120,000.00	120,000.00
Reserve for Contingencies	369,088.87	1,224,100.25
Capital Stock		
7% Cumulative First Preferred	18,951,500.00	18,951,500.00
Management Stock	15,000.00	15,000.00
7% Cumulative Second Preferred	2,120,700.00	1,113,300.00
Common Stock	6,501,445.01	7,508,845.01
TOTAL CAPITAL STOCK	$27,588,645.01	$27,588,645.01
Capital Liability—Cash paid on Subscription Stock		71,335.22
Surplus	3,528,493.53	5,631,171.90
TOTAL LIABILITIES	$48,256,139.39	$48,988,952.41

DAUM MADE VICE-PRESIDENT OF PENNSYLVANIA RUBBER

At a special meeting of the Board of Directors held Tuesday, November 6th, in Jeannette, Pa., George W. Daum was elected a Vice President of the Pennsylvania Rubber Company. This appointment comes as a mark of recognition of his valued services over an extended period, Mr. Daum having been with the company for more than fourteen years, holding positions as Cost Manager, General Superintendent, and his present incumbency, Assistant General Manager.

The official body of the Pennsylvania Rubber Company now comprises Herbert DuPuy, Chairman of the Board; Charles M. DuPuy, President; Seneca G. Lewis, Vice President-General Manager; George W. Daum, Vice President; and A. H. Price, Treasurer.

Lake Shore Plant Not Sold

Despite premature reports that the Lake Shore Rubber Co., Wellington, Ohio, had been sold to C. M. Ross at a receiver's sale, it is now learned that the court did not confirm the sale because the highest bid was only slightly over half the appraised price of $15,000. It is expected that the plant will be reappraised and another sale held.

Erie Plant Still Unsold

As reported in these columns in the last issue, the stockholders failed to bid for the plant of the Erie Tire & Rubber Co., at a meeting held on Nov. 8. The sale date has been postponed until Nov. 20 in order that the stockholders or others interested may have an opportunity to bid on the plant and property.

N.A.W.M.D. Southern Division Formed

A Southern Division of the National Association of Waste Material Dealers was formed on October 30 in Chattanooga, Tenn. The organization meeting was attended by 27 members and a number of guests some of whom made application for membership. It is expected that in a few months this new division will number close to 50. The association now has a total membership of 360.

Thomas W. McDowell

Thomas W. McDowell, for nearly 40 years connected with the Goodyear Rubber plant in New Haven died after a long illness at the age of 70 on October 30. He was general manager of the company for the past ten years and previous to that time had been factory manager.

Mason Sales Conference

A conference of the sales forces of the Mason Tire & Rubber Company was held recently at Kent, Ohio. In addition to a number of talks by officers of the company a large dinner was held at Young's.

DEVINE TO MANUFACTURE DIESEL OIL ENGINES IN U. S.

Announcement is made by the J. P. Devine Co., Buffalo, N. Y., manufacturers of vacuum drying and other equipment for the rubber industry, of the addition of semi-diesel oil engines to its line of manufacturers. They have obtained the rights in the United States and its dependencies to manufacture and sell the Vickers-Petters engines now made in England by the Vickers-Petters Ltd., Ipswich, Engand.

These engines are said to have many novel patented features and are made in sizes from 25 to 510 B.H.P. Elaborate preparations are being made by Devine for the immediate manufacture of these engines.

New Tank Ball

A tank ball said to maintain a rigidity which assures a perfect seat in the valve has been patented, and is being marketed by American Rubber Products Corporation, Newark, N. J. The rubber bottom

New Rubber Tank Ball With Copper Top

of the ball is molded by a double vulcanization process into one piece, and the top is of copper. Laboratory tests, it is claimed, prove that the metal top is impervious to any chemical action which might result from acids or alkali in the water. The top and bottom are carefully joined to prevent any possibility of a bead.

Another advantage is declared to exist in the spud at the top of the tank ball which cannot come out as it does when imbedded in rubber.

Wilson Rubber Building

Work on the plant of the Wilson Rubber Company, at Canton, Ohio is progressing rapidly according to reports. The foundation has been completed and is ready for the steel frame work.

Seiberling All-Weather Tread

Seiberling dealers recently received announcement of the All-Tread tire with a number of sample advertisements and letters to be sent to prospect list.

GERMAN TIRE PRICE INCREASE

German domestic tire prices are now practically on the world market plane. Prices were placed on a gold basis on August 12, and were increased 25 per cent September 1. Retail prices on October 1, were as follows (conversion of gold marks at 4.20 to the dollar):

	Cord	*Fabric*
760 x 100	$22.50	$16.54
815 x 105	28.35	18.54
820 x 120	30.60	24.82

Price and discount lists are no longer issued by Continental, Dunlop and Peters Union, owing to the high cost of printing and paper. The unsettled conditions of the market still prevent any attempts to introduce American tires Consul Cornelius Ferris informs the Department of Commerce.

MID-WEST SEEKS ELIMINATION OF 5% TAX ON TIRES

Fabric sellers and tire manufacturers who attended the meeting of the Mid-West Rubber Manufacturers' Association at the Hotel La Salle on Nov. 13 generally reported an improvement in conditions in recent weeks. One tire fabric salesman expressed the belief that tire stocks are appreciably less than 60 days ago and said the tire industry had apparently "turned the corner." Another fabric man said that the bull market on cotton had naturally made it easier to sell fabrics in recent days. Others said current purchases of supplies were being reduced in view of the approach of the inventory period.

A committee was appointed, with J. B. Gabelline, of the Standard Four Tire Co., as chairman, to work with Secretary C. S. Sutherland in drafting a request to Congress that the 5 per cent tax paid by tire manufacturers on sales be eliminated. It was pointed out that tires are a necessity, hence should be among the first items benefited if Federal taxes are to be cut. Several said this tax prevents a fair return by tire firms to their stockholders.

L. E. Sexton, of the Inland Rubber Co., was named chairman of a committee to get the members' opinion on the proposal of the *Tire Rate Book* to print dealers' price list in the January number, in view of the fact that consumer price lists have been discontinued. Most of the sentiment voiced at the meeting was unfavorable, although a representative of the publication declared many firms approve the idea.

President Thomas Follen announced that the annual meeting and election of officers will be held in Chicago Jan. 29 and that there will probably be a previous meeting on Tuesday, Dec. 11. He also said that the investigation of the practices of certain firms in the industry is being continued.

RECENT IMPORT DUTIES LEVIED ON RUBBER GOODS

Czechoslovakia

The conventional rates, where given, apply to imports from France, Italy, United Kingdom, Belgium, Austria, Hungary, Germany, Switzerland, Yugoslavia, and other countries having most-favored-nation status with Czechoslovakia. Imports from the United States, Canada, and other countries not having most-favored-nation treaties with Czechoslovakia are subject to the rates of the general column.

Rubber goods coming within tariff numbers 304, 305, Ex312 (rubber sponges), and Ex314 (hard rubber combs), are on the "Unrestricted List" and freely imported. Rubber goods coming within tariff numbers 308, 309, 318, and 319 are freely imported, and subject only to notification of importation. The importaion of all other rubber goods into Czechoslovakia is permitted only by import license.

Automobile tires are subject to a manipulation fee of 3 per cent, assessed on the invoice value.

The Czechoslovakian crown is a fictitious coin whose par value has not been established. The exchange rate of the paper crown is about 33 to the U. S. dollar. Metric system is in use; kilo equals 2.2046 pounds avoirdupois. Duties are assessed on gross weight, unless otherwise specified, and tare allowances (in terms of gross weight) are provided according to method of packing.

Item No.	Articles.	Rate of Duty (Crowns per 100 gross kilos) General.	Conventional.
	India rubber and gutta percha and wares thereof:		
304	India rubber, gutta percha (also balata), raw or refined; waste thereof, old used pieces of wares manufactured therefrom; india rubber regenerated from rubber waste (Mitchel's gum)	Free.	....
305	India rubber, dissolved	42	....
306	India rubber, paste ..... Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	70	....
307	India rubber threads, not covered with yarn (also flat, not more than 3 mm. wide)	36	....
308	Sheets, unvulcanized, cut, coated, rolled (patent sheets) ..... Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	280	....
309	Wares made of patent sheets, not specially mentioned, vulcanized or not, combined or not with fine or common materials ..... Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	3600	....
310	Children's toys and games of soft india rubber, combined or not with fine or common materials . Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	1000	....
311	Boots and shoes, combined or not with textiles of all kinds or with other materials ..... Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	1200	600
312	Wares of soft india rubber, not specially mentioned, combined or not with fine or common materials ..... NOTE—Roller covers, surgical gloves, surgeons' masks ..... Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	1300 700	....
313	Hardened india rubber (solid or hard as leather) in sheets, rods, and tubes, polished or not, but not further worked ..... Solid rubber tires for automobiles Tare—14% in cases and barrels; 13% in baskets; 6% in bales.	210 210	 105
314	Wares of hardened india rubber, not specially mentioned: (a) Rough pressed, the pressing seams being visible	840	....

(b) Other, combined or not with fine or common materials ..1350 ....
Tare—16% in cases and barrels; 13% in baskets; 6% in bales.

315 Woven and knitted materials covered, impregnated or coated with india rubber or with internal layers of india rubber, if the yarns used therein consist:
(a) Wholly or partly of silk, floss silk, or artificial silk ..3000 2100
(b) Of other textile materials, also felt of such materials .1300 910
Tare—13% in cases and barrels; 9% in baskets; 6% in bales.

316 Elastic fabrics, knitted wares, and haberdashery, if the yarns used therein consist:
(a) Wholly or partly of silk, floss silk, or artificial silk ..3000 2100
(b) Of other textile materials:
(1) Shoe elastic 1700 1190
(2) Other 1850 1295
Tare—13% in cases and barrels; 9% in baskets; 6% in bales.

317 Clothing and other articles made with stuck or sewn additions to materials mentioned in Nos. 315 and 316 are dutiable as these with a surtax of 20%.

318 Wares of india rubber combined with very fine materials .....3600 ....
Tare—20% in cases and barrels; 13% in baskets; 6% in bales.

319 Wares of india rubber with mounting of precious metals:
(a) Of gold .....13600 ....
(b) Of silver .....9600 ....
Tare—20% in cases and barrels; 13% in baskets; 6% in bales.

320 Articles for technical purposes:
(a) Card-clothing fabrics for carding factories, by permission and under control 49 24.50
(b) Tubing or hose of, or combined with india rubber, with or without layers of fabrics or inlaid wire .... 910 ....
NOTE—Tubing made of patent sheets is to pay duty under No. 309.
(c) Packing (engine packing) .2000 ....
(d) Transmission belts .....2000 ....
(e) Pneumatic tires (inner or outer tubes):
(1) For cycles 1500 1050
(2) Other 3000 1500
(f) Insulating material of patent sheets, vulcanized or not .. 910 ....
(g) Fittings for technical and electro-technical purposes, for instruments, etc., of hardened india rubber, except such as are included under No. 314 (a) ..... 405 ....
NOTE—For telephone and microphone construction, by permission and under control .....Free. ....
(h) India rubber press cloths and other technical articles not specially mentioned .... 360 ....
Tare—13% in cases and barrels; 9% in baskets; 2% in bales.

551 Wheels for cycles, separate, finished, imported singly:
(b) With pneumatic tires ..... 120 ....

Reduction of Manipulation Fees on Imports of Rubber Goods into Czechoslovakia

The Czechoslovakian Ministry of Commerce has announced the reduction of manipulation fees on the following rubber articles:

Tariff No.	Articles.	Manipulation Fee Former	New
310	Toys of soft india rubber	5%	2%
Ex312	Solid tires	3%	1%
318	Rubber goods mounted with finest material 10%		5%
319	Rubber goods mounted with precious metals 10%		5%
Ex320	(e) (2) Automobile tires	3%	1%

The above fees are in addition to the import duties and assessed on the invoice value of the goods.

Nicaragua

A treaty between Nicaragua and France provides that certain French products (when accompanied by certificates of origin) receive 25 per cent rebate of duty upon importation into Nicaragua; by most-favored-nation treaty these concessions apply to the same commodities from Great Britain and Germany, and a special decree extends the same rates to the United States. Elastics of cotton and wool (Item Nos. 471, 472, 604, and 605) are the only rubber manufactures which receive the benefit of this rebate.

Gold cordoba equals $1.00. Kilo equals 2,2046 pounds avoirdupois. Duties are payable in gold cordobas or United States currency.

There is a surtax of 12½ per cent of the duty levied on all imports.

Tariff No.	Articles.	Dollars per net kilo.
*471	Cotton elastic bands, braids, ribbons, tape; or fabircs manufactured with threads of elastic rubber	.70
*472	Cotton suspenders, garters, and shirt or arm bands, elastic or not, and other made-up articles of elastic cotton fabrics, ribbons, tapes, or bands .....1.00 (NOTE—All the items mentioned in items 471 and 472 shall pay in addition to the duty provided for, 10% ad valorem if they are combined, ornamented, trimmed, or jeweled with silver, gold, or other precious metals or with precious stones.)	
477	Hose of cotton or other vegetable fibers, or of these combined with rubber, to be used with machinery or not ..... (Note—The weight of fittings, nozzles, and connections, if attached to the hoses, shall be included in the dutiable weight.)	.09
478	Belting of cotton or other vegetable fiber for machinery	.20

WITH MUCH TO BOOT

Here is a picture of what is said to be the world's largest rubber boot on recent exhibition at the Shoe and Leather Trades Exposition at Islington, England. This giant boot was made in one day by fifteen girls. It weighs fourteen pounds and is six feet high.

479	Waterproof fabrics of cotton and rubber or caoutchouc	.20
480	Ponchos and blankets of material described in item 479	.40
481	Coats, overcoats, capes, trousers, breeches, hats, caps, hoods, and similar small articles of materials described in item 479 ..... (Per dozen pairs)	.50
482	Dress shields of material described in item 479 or of other cotton material .. (Per net kilo)	.72
483	Articles not otherwise provided for, manufactured of fabrics of rubber or caoutchouc and cotton, or of cotton fabrics waterproofed with rubber or caoutchouc	.30
565	Hose of flax, hemp, or other vegetable fibers (or hose of these materials and rubber), to be used with machinery or not ..... (Note—The weight of fittings, if attached to the hose, shall be included in the dutiable weight.)	.09
566	Belting for machinery, of the same materials	.20
*604	Elastic bands, tape, or fabric of wool or hair, manufactured with threads of elastic rubber	.70
*605	The same, made up into articles 1.00	
626	Silk elastic bands, braids, ribbons, tape, or fabrics, manufactured with threads of elastic 3.50	
	(a) The same, manufactured into articles 4.00	
1081	Rubber, crude, and waste, scrap, or refuse rubber	.10
	(a) Rubber or gutta-percha in sheets, whether or not mixed or combined with other materials for machine packing	.12
	(b) Machine packing, not in sheets, of rubber, pure, or combined with any material, including piston packing, valve packing, etc., and rings, disks, gaskets, and washers	.10
	(c) Transmission belts of rubber combined with other material	.25
	(d) Hose of rubber combined with other material ..... (Note—The weight of hose fittings shall be included if attached.)	.05
1082	Tubing of rubber or gutta-percha, combined or not with other material, with or without accessories; and rubber in sheets	.45
	(a) Rubber tires, combined or not with other material, and inner tubes, for wheels of carriages, automobiles, bicycles, and the like	.60
	(b) Rubber hat forms	.45
	(c) Floor covering, or door or floor mats of rubber, combined or not with other material	.18
	(d) Boots and shoes of rubber, combined or not with other material	.50
	(e) Water bottles, or caps, fountain syringes, ice and urinal bags, of soft rubber	.70
	(f) Nipples, nursing bottle fittings, teething rings, and similar articles, of soft rubber	.70
	(g) Rubber type and stamps	.70
	(h) Rubber erasers	.60
	(i) All articles and manufactures of soft rubber, not elsewhere mentioned	.70
1083	Dental rubber, combined or not with color, metal powder, or other substances 1.75	
	(a) Rulers or measures, of hard rubber, combined or not with soft rubber or other material 1.20	
	(b) Hard rubber penholders 1.40	
	(c) Fountain pens of hard rubber, with or without gold nibs, and with ornaments or parts of mother-of-pearl, gold, silver, or other metal .....8.40 (Per dozen)	
	(d) The same, with gold nibs and without ornaments of any kind 4.20	
	(e) The same, with other nibs and without ornaments; also styles of hard rubber .....1.20 (Per net kilo)	
	(f) Trays for photgraphic developing and other purposes, of hard rubber or imitations thereof	.50
	(g) Syringes and syringe tips of hard rubber 1.75	
	(h) Cigars or cigarette holders, or mouthpieces for pipes, of hard rubber 2.00	
	(i) Combs, side combs, back combs, hairpins, and hair ornaments of hard rubber 1.40	
	(j) All articles of hard rubber not specially mentioned 1.75	

*Articles coming within these item numbers receive the 25% rebate mentioned in the first paragraph of this circular.

How Goodrich Reduces Haulage Costs

Its Inter-mill Transportation System Is Applicable to any Small or Large Factory

Being the Experience of the Superintendent of Factory Traffic of the B. F. Goodrich Co., Akron, Ohio.

SINCE the introduction of our present system of internal transportation, material of all kinds has been handled far more economically than it was ever handled in the past when we had to depend on hand trucks and wagons. In fact, it does not require much imagination to see that without these facilities we have today, production would be seriously interrupted and our industrial expansion would have been greatly limited."

This statement, coming as it did, from the superintendent of inter-mill traffic at the B. F. Goodrich Company, immediately suggested the idea that other manufacturers might get some worth-while pointers from the plan now being used at the Goodrich plant. Hence, this article.

This concern is operating close to 40 trains and each train averages 11 cars per trip. There is a subway connection to all buildings and the trains operate almost exclusively through this subway system.

The subway has one main line approximately a mile long. From this are branches running in every direction and touching every one of the 30 buildings of the main manufacturing group. There are 15 stations in the subway system and the plan of operation is almost identical to that of our modern railways. A dispatcher controls and directs the running of the trains by telephone. Before him is a board which designates the number of the train, its load, operators, and the point to which it is destined. He operates these trains on a schedule to avoid congestion at either end of the main line or on the branches. He is able to locate a train at any moment.

The dispatch office receives orders by mail, telephone or messenger, which are relayed through inspectors to the operators. A way-bill, shown in the illustration to the right, is made out for each loaded car before it can be moved. This bill gives such information as shipper, consignee, train number, material, and so forth, similar to the bills of lading issued by the railroad companies. The orignal of this way-bill goes on file at the shipping office while the duplicate is attached to the load.

When this load is delivered, the train conductor takes up the duplicate as his credit to the railroad. In most cases the shipper pays the transportation charges which are on a basis of weight.

In this connection an interesting experiment has been conducted on the matter of determining wages of operators. All labor employed on the inter-mill system shares, on a proportionate basis, in the earnings of the system's carriers. Wages are computed on the basis of each 1,000 pounds transported. The haulage charges vary according to the material and bulk in the same manner as they do in railway transportation. For instance, on small, heavy pieces the transportation cost may run as low as a half-cent a 1,000 pounds; while on light, bulky material it would run as high as 20 cents. The earnings of the system are pooled daily and the maintenance employes share proportionately in this pool.

Considerable care is taken as regards the safety of both operators and their loads. Green signals placed in various parts of the subway enable the dispatcher to call one of his inspectors at any moment. Red signals are located at points where curves in the subway line make it dangerous for trains to pass. These signals are operated by the trainmen as they pass through the danger zones.

THE B. F. GOODRICH CO.
Electric Transportation Delivery Card

Date	19
From Dept.	Division
To Dept.	Division
To Building	Floor
To Station Number	
Material	
Notify Mr.	
Signed	Shipper
Charge Department	
Gross Weight	Pounds
Shift Number	Tractor Number
Operator	
Date	19
From Dept.	Division
To Dept.	Division
To Building	Floor
To Station Number	
Material	
Notify Mr.	
Signed	
Charge Dept.	**Gross Wt.**
Shift Number	**Tractor No.**
Operator	

KEEPING COSTS IN CLOSE CHECK
This way-bill is made out for each loaded car before it can be moved. The original goes on file at the shipping office, while the duplicate is attached to the load. No goods will be carried without a way-bill

The trains usually consist of from 4 to 12 trailers, but not infrequently they run as long as 20, carrying loads of from 1,500 to 4,000 pounds a car. The average daily haulage on this system is 12,272 tons and the average distance for each train operated is 11 miles per day.

The main problem confronting the directors of this system is the manipulation of rolling stock to affect the smallest possible movement of "empties." The problem is studied with as much concern as the railroads study their traffic problems. Though the figures given are based on records for 1920, and considerable improvement has been brought about in the system's operation since then, the showing made with the available rolling stock would be considered remarkable to most railroad officials.

With but 920 trailers or cars available, the average number moved over the system per day was 9,542. Of these 7,728 were loads and 1,814 empties. Bearing in mind that the average length of train trip is better than one-third of a mile, the daily haulage would be equivalent to 3,864 ton-miles.

The network of tunnels in this concern's transportation system is interesting from the very practical part it plays in the efficient maintenance of factory production. There is no exposure to the weather of raw or finished products. Inter-mill transit of delicate materials is made less hazardous. Neither time nor money is lost through the conveyance of materials that are spoiled by freezing temperatures.

The tunnels serve a secondary purpose of providing an accessible avenue for the transmission of power to the various units of the factory; steam, water, electric, and air lines run overhead. Forced ventilation through each section of the subway permits the control of temperature and assures an atmosphere always safe and agreeable to train operators.

An accurate record is kept up from information furnished by the files of way-bills gathered from each shipping station. These bills show the amounts and kinds

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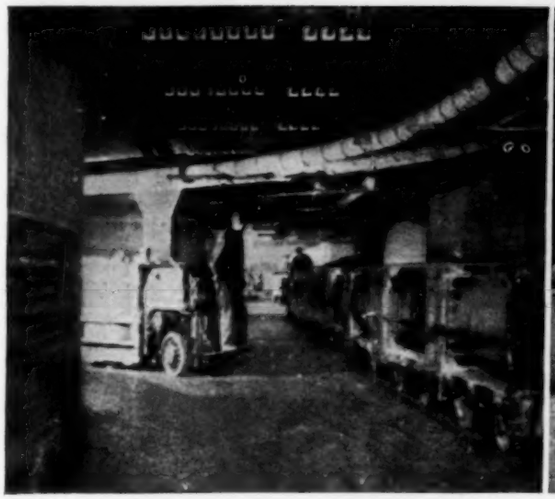


RAPID TRANSIT IS POSSIBLE HERE

Through the main subway there is an almost constant stream of trains. These tunnels, besides providing thoroughfares for traffic, serve a secondary purpose as passages for steam, water, electric and air lines which are run overhead.

TO ELIMINATE IDLE EQUIPMENT

Great care is taken to decrease the movement of "empties" to the irreducible minimum. A good idea of the excellent results made in this respect is shown by the stabilities of a period of a year. With but 920 cars available, the average number moved a day was 9,542. Of these only 19% were empties.

of materials transported, the shift on which it was handled, the train number (which is the number on the locomotive), the operator, and to whom delivered. When this information is consolidated into one comprehensive report it shows how much material was hauled by each locomotive during the day.

This is used for two purposes: to enable the operators to have before them what has been accomplished on previous days in the way of haulage and also to give the directors of the system a graphic chart on the operating results of their equipment.

The kind and type of locomotive or truck provides its own testimony through this chart. The haulage records are recapitulated into the daily record columns of monthly sheets and by looking back over these pages the superintendent of traffic can see at a glance how each truck is holding up. This is invaluable information when the question of renewal of equipment comes up or the traffic demands require the purchase of new and more up-to-date trucks.

A record is also kept of costs of repairs on each tractor or locomotive. Co-operation with the manufacturer of the unit is given through these records, for they are available to their representatives and have enabled them in some cases to improve on the details of construction and overcome weak parts.

Incidentally, this cooperation between user and manufacturer has resulted in many improvements in the equipment which might not have been made otherwise.

This is nothing more or less than the extension of that policy of the "exchange of ideas" which manufacturers in all lines of industry are finding more and more profitable. And after all is said and done the real test of the value and quality of a product is the satisfactory fulfilment of the user's needs. The customer's ideas for the product's betterment are certainly worth all of the attention which can possibly be given them on the part of the manufacturer.

The total cost of operation and maintenance of the entire inter-mill transportation system is distributed monthly to the various departments in proportion to the amount of service they have received.

This provides an additional incentive for the varous departments in the shop to plan the transportation of material so that the largest number of tons can be moved for the least cost. The accurate information afforded by the way-bills provides a fair guide for this distribution.

Within 16 months after the first trains were put in operation an 800% gain in haulage had resulted.

The improvement in the efficiency of inter-mill transportation is reflected in this report also, for the materials hauled in those first 16 months were materials transported largely by hand trucks and wagons before the institution of the train system and the transporting time alone had been reduced 50%.

Seven Kinds of Materials Handled

Classification of Tonnage

1. **Finished Goods. Includes the finished product of all departments that are to be transported to the shipping room or to storage.**
2. **Raw Material. Includes pigments, dry and liquid; crude rubber; shoddy; soapstone; fabric; and so forth.**
3. **Material in Process of Manufacture. Includes batch stocks, incompleted products carried from one operation to another, and so forth.**
4. **Supplies. Includes cartons, wrapping paper, twine, printed matter, and stationery.**
5. **Containers and Equipment. Includes aprons, liners, shells, stock books, molds.**
6. **Salvage. Includes all scrap and by-products to be reclaimed or to be sold as scrap.**
7. **Refuse. Includes sweepings, dirt, scrap of all kinds, garbage and all material to be disposed of.**

Vulcanizing India Rubber

India rubber in the solid form or in the state of a solution is vulcanized with or without heat by mixing it with sulphur, zinc oxide or certain other metallic compounds, carbon disulphide with or without the addition of a substance such as carbon tetrachloride, which reduces its inflammability, and a primary or secondary amine. This may be an aromatic amine, for example, benzyl amine, if the inflammability-reducing substance is absent. Carbon oxysulphide may be used in the place of carbon disulphide. Suitable amines are methylamine, dimethylamine, diethylamine, benzylamine, dibenzylamine, piperidine, aniline, paratoluidine, triethyl trimethylenetetramine and tribenzyl trimethylenetetramine. The carbon disulphide may either be added with the other ingredients during milling, or it may be applied subsequently by painting the articles with it or subjecting them to its vapors. (British Patent No. 200,788.)

A Campaign Against Price Fixing

By E. J. Buckley

IF one can judge by its recent activities, the Federal Trade Commission has planned a forceful campaign against the practice of manufacturers of trade-marked articles of controlling the resale price to the consumer. Within the last few days three prosecutions have been brought for this alleged violation of the law against unfair competition, one against a collar manufacturer, the second against a hosiery manufacturer and the third against a shirt manufacturer. All three are accused of operating plans of forcing retailers to resell their products at fixed prices, which the Commission contends is unfair competition in that it deprives consumers of the price-lowering effect of real competition among dealers. Absolute control of the resale price is undoubtedly unfair competition, and if the Commission can prove that what these concerns did amounted to more than threatening to cut dealers off or cutting them off if they cut the price, then they will be found guilty and forced to abandon their plan.

The law has been well settled by the United States Supreme Court in the Victor talking machine case and other cases, that the seller of a patented or unpatented article, who does not have a monopoly and who is selling his goods outright, cannot legally fix the resale price, or at least cannot *enforce* the resale price, because that would be assuming a dictatorship over goods which are no longer his. Nevertheless, all cases have freely conceded the seller's right, if he has no monopoly, to refuse to sell goods to a cutter, even for the sole reason that he cut prices.

The difficulty which the manufacturer therefore has who wants to fix resale prices, is to make his scheme stop with what amounts in substance to no more than letting the trade know what he thinks the resale price ought to be, with the implied threat to cut off anybody who doesn't observe it. That far he can go legally, but if he goes further and actually controls the resale price, he is undoubtedly guilty of unfair competition.

The price control plan which the Federal Trade Commission charges was used in the three cases referred to, is substantially as follows. There are slight variences in the three cases, but the schemes are essentially the same:—

(a) It issues price lists to the retail trade in which its various established resale prices for its said products are set forth.

(b) It requests and insists that retail dealers handling its said products shall observe said resale prices.

(c) It makes it generally known to the trade by letters, circulars, salesmen, interviews and by other means that it requires all distributors handling its said products to maintain and enforce said resale prices, and that it will refuse further sales to all dealers failing to observe and maintain the same.

(d) It procures from retail dealers handling its said products reports of instances of non-maintenance of said resale prices by other distributors handling said products.

(e) It requires its traveling salesmen and other agents to report, and they do report the names of retail dealers who are selling, or have sold respondent's said products at prices other than said established resale prices.

(f) It uses the information received through reports mentioned in (d) and (e) above to induce and compel the observance of said resale prices by all of its said distributors so reported to it by

(1) Exacting promises and assurances from such distributors that they will thereafter maintain respondent's resale prices and

(2) Threatening that if such prices are not maintained no further shipments will be made to such distributors by respondent or others.

(g) It keeps a blacklist or other record in which are entered the names of dealers handling its products who have failed to observe and maintain its said resale prices.

(h) It refuses to supply such dealers with further goods until they have given satisfactory assurance for the maintenance of such prices in the future.

(i) It adds new retail dealers to its list of distributors upon receiving assurances or promises of said distributors that they will observe and maintain said resale prices.

(j) It seeks and secures the co-operation of its distributors, customers and agents generally in preventing others who have failed to maintain said resale prices from obtaining respondent's said products.

(k) It utilizes a system of numbers stamped on containers of its products to enable it to trace the source of supply of dealers failing to maintain said resale prices in order to prevent such dealers obtaining further goods.

(l) It has used, and now uses other equivalent co-operative means and methods for the enforcement of its said system of resale prices; all with the result that its said prices have been and are generally observed and maintained throughout the United States by distributors handling said products.

This goes pretty far—I don't see how a manufacturer could do more to uphold his prices—but it doesn't necessarily follow that the manufacturer who does this has exceeded his legal rights. If I were defending this case I should take the ground that fundamentally I had the right to refuse to sell to cutters, and therefore all I did was to keep track of the trade in order to learn whom to refuse to sell. Spotting dealers who cut your price and cutting them off is not in my judgment unfair competition, and will never in my opinion be held to be by any court. You don't have to sell *anybody*—you can cut off this dealer, and that one, without reason or system, until you are selling but one concern. That would certainly reduce—it would even destroy—competition, but nobody would question your right to do it. It may be that some of the things these manufacturers did went beyond the line, but there is a strong chance that the Supreme Court will refuse to declare the fundamentals of the scheme illegal.

(Copyright, September, 1923, by Elton J. Buckley, Esq., 643 Land Title Building, Philadelphia, Pa.)

The Best Size for a Business

Almost every man feels that if his business were only larger, his profits would be greater and all would be well. A business man's career is usually a continuous struggle to make greater sales and to make his plant larger.

Undoubtedly the manufacturing of the future will be done by the large enterprises for only they can achieve the economies of mass production. But it does not follow that it will be done in tremendous plants, centralized in one location. Farsighted business men and engineers realize that the big plant is not always the most economical one either for making or for selling.

There is a best size of manufacturing unit for each industry. The big business will have many such units spread over the country.

If the plant is too small it cannot afford to pay the price demanded by men capable of manufacturing economically for it cannot utilize all of their ability. It must put up with inferior, cheaper talent.

If on the other hand the plant is too large, executive supervision will not be able to cover it completely. There will be a fringe that will escape proper supervision. That means that something or other will constantly be going wrong.

To determine just how large your plant should be, for best results, is a study that will well repay the effort and time taken.

By William R. Basset, President, Miller, Franklin, Basset & Co., Inc.

Goodyear Acquires Zeppelin Airship Rights in United States

Will Organize Lighter-than-Air Manufacturing Company With the Zeppelin Company Holding a Minority Interest

CONFIRMING the report in our last issue, official statements have recently been issued by the Goodyear Tire & Rubber Company in regard to the purchase of the rights in this country and Canada of the Zeppelin Company of Friedrichshafen, Germany. The latest statement was issued on November 8 by P. W. Litchfield and is as follows:

"Arrangements have just been concluded by The Goodyear Tire & Rubber Company by which the cumulated experience of the Zeppelin Company in rigid airship construction and operation will be placed at the disposal of military and commercial interests of this country.

"A Goodyear subsidiary company known as the Goodyear-Zeppelin Corporation is being organized which will have exclusive rights in all of North America except Canada, and non-exclusive rights in Canada, of all patents, trade secrets, designs, processes and machinery of the Zeppelin Corporation and its various subsidiaries in the construction of airships, gas bags and hangars, and the operation of ships.

"The Goodyear-Zeppelin Corporation will be an American owned and controlled corporation. Insofar as possible, the work of building Zeppelins will be done at Goodyear Akron Factories and at Wingfoot.

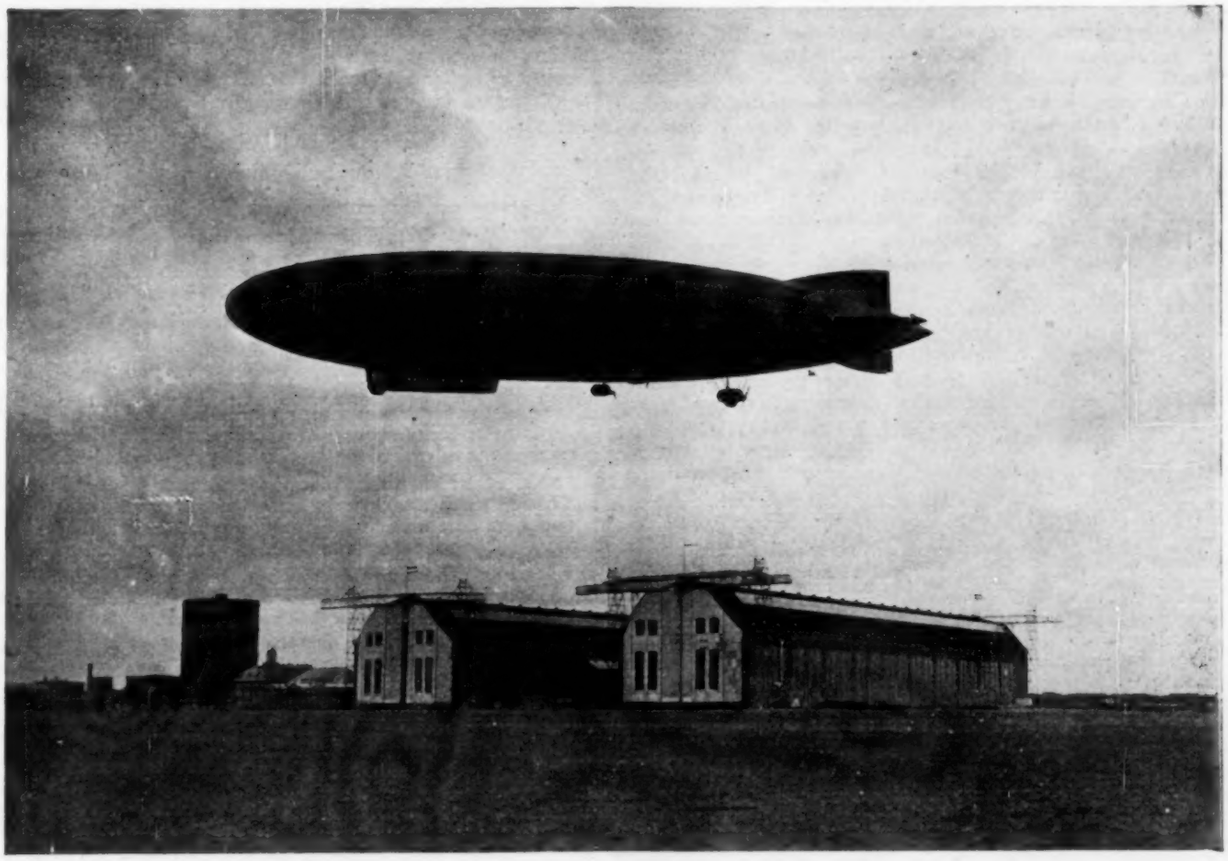
"The new company will be in a position to design, construct and operate airships. It is planned also to carry on scientific investigations in such subjects as non-inflammable gases, prospective commercial air routes and other subjects germane to aerial navigation.

"The arrangements just completed will combine the experience of the Zeppelin Company with our own, and to provide for the Goodyear-Zeppelin Corporation having access to the developments and improvements made by the German Zeppelin Company in the future, and by any other companies building Zeppelin ships in other countries.

"The Goodyear Company's active interest in lighter-than-air navigation dates back to 1910, when officers of this company went to Europe and arranged with one of the leading European companies to bring over machinery for manufacturing aeronautical fabrics, and made a study of the latest European practices up until that time.

"Since then the Goodyear Company has been engaged in producing a complete line of lighter-than-air products as well as rubber accessories for heavier-than-air.

"When aeronautics began to play a prominent part in the late war we started the manufacture of kite balloons. When



The Zeppelin Airship Station at Staaken, near Berlin, with the Commercial Zeppelin "Bodensee" Overhead, about to Land

America went we began the construction of non-rigid dirigibles, and became the largest suppliers of lighter-than-air craft in the country.

"Airships are of three types—the non-rigid, which we have been building for several years; the semi-rigid or Italian type, which we are now constructing in Akron for the Army; and the large rigid or Zeppelin type.

"Realizing the possibilities of rigid airships, both for military and commercial use, we have long realized the desirability of adding this type to our line at Akron. Count Zeppelin was the inventor of this type, and during the war his company built and operated 120 rigid airships out of a total of approximately 160 which have been built all over the world to date. This experience resulted in many inventions and secret processes of great importance to the practical and economical construction and operation of airships.

Possibilities of Long Flights

"Among some of the striking examples of the possibilities of the Zeppelin ships are the flight of the R34 (a British ship built after the Zeppelin model) across the Atlantic Ocean and return, and the trip of the Zeppelin L59 which in November, 1917, sailed from Bulgaria across the Mediterranean down to German East Africa to relieve a beleaguered force, but finding that it had surrendered, turned and came back to its base without landing, making the flight of 4225 miles in less than four days.

"More striking, as showing the commercial possibilities of the Zeppelin ships, is the fact that a Zeppelin subsidiary company during the three years before the war carried 35,000 passengers, without an accident, and the Zeppelin Bodensee during the period August 24 to December 1, 1919, carried 2380 passengers, 11,000 pounds of mail (440,000 letters) and 6600 pounds of express matter between Friedrichshafen on the Swiss Frontier and Berlin, under all kinds of weather conditions.

"Further operations of the Bodensee and its sister ship the Nordstern were stopped after that period by the Inter-Allied Commission.

"The performance of the Navy ship "Shenandoah," built after the Zeppelin design, is recent history.

"Negotiations have gone on for some time with the Zeppelin Company to bring to America the experience that they have had, in order to do everything possible to keep America in the lead in this field. We have been working in close cooperation with the United States Government, through the Aeronautical Departments of the Army and Navy, and the bringing over of the Zeppelin rights for American use has their cordial approval.

"These negotiations were culminated when officers of the Goodyear Company visited the works of the Zeppelin Company at Friedrichshafen in September."

A previous statement was as follows:

"A new company, subsidiary to Goodyear, will shortly be organized for the purpose of manufacturing lighter-than-air ships and all requirements of that branch of aviation. The new company will be managed and controlled by Goodyear, and the Zeppelin interests will receive a minority interest in the company in exchange for their patent rights and the services of their technical staff. There has been no payment of cash by Goodyear to Zeppelin, and no cash consideration is involved in the acquisition of patent rights. The sole compensation to Zeppelin is a minority interest assuring them an equitable share in the results of the business.

Goodyear Already in Field

"The Goodyear Tire & Rubber Co. has long been the leading producer in this country of lighter-than-air craft, and the principal source from which the Government has obtained its non-rigid and semi-rigid ships. The company is in fact today serving both the Army and the Navy in this capacity. With the advent of the rigid airship, and the results accomplished over the world with this type of vehicle, Goodyear resolved that its ability to maintain its position as leading producer of lighter-than-air craft would depend on its ability to successfully produce rigid ships. In the spirit also of keeping this country fully abreast with world-development in lighter-than-air rigids, Goodyear resolved to supplement its own technical staff with the best technical experience obtainable in the world. The Zeppelin Co., which is now building a reparation ship at Friedrichshafen for this Government, seemed unquestionably to offer an opportunity which could not be duplicated elsewhere. They had pioneered lighter-than-air development for over twenty years, and had studiously built up a volume of technical experience and a staff of experts superior to any other. Their achievements received world recognition just prior to and during the war, when many ships were turned out and operated with outstanding successes, including the commercial and safe transportation of many thousands of passengers.

"The Treaty of Versailles makes it impossible to continue either the construction or commercial exploitation of airships in Germany, and the negotiations just concluded by Goodyear make it possible to transfer to America all the benefits and experience attained by the Zeppelins during their long struggle in experiment and research.

"The practical successes of lighter-than-air aviation are more readily accepted in Europe because of its closer contact with the startling results already achieved. Confidence in this country is rapidly growing with the performance of the Shenandoah, and there is every reason to hope that America may now assume a leading and perhaps a dominant position in the introduction of rigid airships for both military and commercial uses. The arrangement just consummated assures to Goodyear exclusive rights in the United States and Canada, and therefore does not preclude formation of a similar industry elsewhere. The question as to whether we shall lead in this line therefore depends on the aggressiveness with which the American industry is launched and conducted.

"Goodyear management is confident that the day of aerial transportation is at hand and that rigid airships will soon demonstrate their practicability for long distance use on both land and sea, and with that confidence is now preparing itself to meet the country's requirements for that type of craft. A thoroughly balanced and experienced technical staff will be at work at Akron within sixty days, prepared to cooperate with the authorities at Washington and any other responsible interests who may desire to embark upon definite constructive projects. Goodyear intends to advance the cause of this new industry along sound, conservative lines, and it will be enlarged just as far and just as rapidly as responsible interest in this country will permit."

What the Deal Means

This statement confirms a rumor that has been circulating for some time that the Zeppelin rights have been purchased by a big American firm, and that giant air liners would soon be manufactured in this country.

It is understood that, when these negotiations are completed, a corps of experienced Zeppelin designers and builders will be brought to Akron from the Zeppelin works at Friedrichshafen, on the shores of Lake Constance, Germany, where Count Ferdinand von Zeppelin built his first floating sheds and made his first successful experiments in the construction of rigid airships twenty-three years ago.

From 1900 to 1919 the Zeppelin Co. built altogether 115 airships, of which three were experimental, nine commercial, and the rest military. It is a noteworthy fact that not a single passenger lost his life on a commercial Zeppelin airship.

When the Armistice was signed, ending the World War, the Zeppelin construction and operating companies in Germany employed 1,600 executives and engineers and 12,000 workmen.

The Zeppelin plants in Germany have virtually closed since the war ended. Under the terms of the Treaty of Versailles, the manufacture of German aircraft which might be converted into instruments of war, is forbidden. For this reason, the plans of German aeronautical engineers to establish a two-and-a-half-day passenger trans-Atlantic service have not been carried out.

With Goodyear's acquisition of the Zeppelin patents and the employment of the Zeppelin engineers who have worked out the plans for a high speed trans-Atlantic service, it is pointed out, it remains for American capital and enterprise to make this world-dream a reality.

Organization of an airship navigation company is foreseen

when the manufacture of the great air liners gets under way in Akron.

It is known, also, that careful surveys have been made by the Zeppelin engineers for the establishment of a twelve-hour New York-to-Chicago air service.

Twenty-five Years of Experience

As the result of twenty-five years of experience, the German engineers have evolved five typs of Zeppelins which may be regarded as standard, capable of carrying great loads of freight, all the fuel necessary for long distance flights, complete crews and from thirty to 100 passengers at the rate of from 60 to 90 mi./hr.

Plans also have been perfected for airships for scouting, long distance patrol work, mine spotting and short distance patrol, in war times.

The performance of these well-developed types has progressed so far that the German makers have been able to guarantee it.

It is understood that the Goodyear deal includes the patents and the right of manufacture on all the engines, the manufacturing machinery and the auxiliaries that have made the Zeppelins the finest airships in the world.

Goodyear officials have made many trips to Germany this year in order to negotiate for the patents.

William Young, Goodyear aeronautical chief, went to Germany several months ago. He announced at the time that an effort probably would be made to obtain the Zeppelin patents.

It is understood that the deal was clinched when P. W. Litchfield, vice president and factory manager of Goodyear, spent the last two weeks of September in Germany.

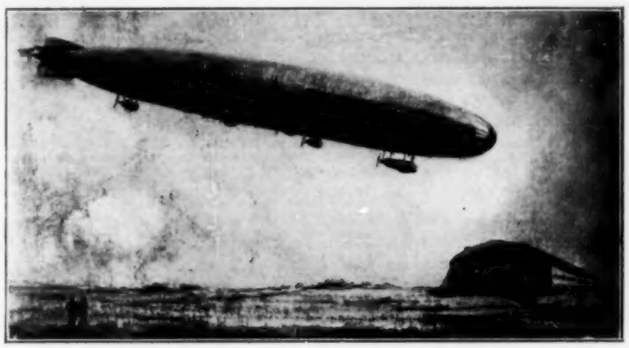
The Goodyear company, which has manufactured most of the airships that have been supplied to the United States Army and Navy, and which now has under construction several medium-sized non-rigids, was encouraged to enter the Zeppelin field by the performance of the ZR1, now known as the Shenandoah, built along Zeppelin lines.

At a dinner held in Akron recently General Patrick of the U. S. Air Service had the following to say of the new move of Goodyear:

"On behalf of Secretary of War Weeks, I am here to express the gratification of the War Department at the patriotic action of the Goodyear Tire and Rubber Co. in placing at the disposal of the government its new Zeppelin plant," he said.

"The War Department wishes the Goodyear Co. Godspeed in its new undertaking and promises its earnest support.

"With its present facilities for dirigible manufacture the Rubber City is destined to become the aircraft center of the world."



The Recently Constructed Shenandoah (ZR1) Based on Zeppelin Plans

General Patrick was present at the conference in Washington early last week between Goodyear officials and government authorities regarding plans for the Zeppelin development in this country.

C. M. McCreery, secretary of the Akron chapter of the National Aeronautic Association, also announced the receipt of a telegram from President Coolidge, who praised the work of civic associations in behalf of aeronautics. The president said:

"Thanks for your message informing me of the activity of Akron Civic organizations in behalf of aeronautics. It is a movement deserving of all encouragement, and I hope your efforts will produce gratifying results.

(Signed), CALVIN COOLIDGE."

Investigation of Cold Vulcanization of Rubber

The nature of the cold process of vulcanization of rubber was investigated. Thin sheets of rubber were immersed in dilute solutions of sulphur monochloride in benzine at 0, 14 and 24 degrees C. The fall in the concentration of the sulphur monochloride solution was measured after two hours. The amount of absorption observed in these circumstances corresponded with that of an adsorption process, that is, the amount of chemical adsorbed in a given time was proportional to the concentration.

At 0 degress C three hours were necessary to attain equilibrium, at 14 degrees C two hours and 24 degrees C one hour. The reaction curves indicate that not only sulphur monochloride but also some of the solvent is adsorbed. Thus, if the sheets of rubber were left for various periods of time in the solvent, and sulphur monochloride was then added, the amount of the latter adsorbed varied with the length of time that the rubber had remained in contact with the solvent. The rate of adsorption of sulphur monochloride, is however, greater for rubber treated with solvent than for untreated rubber.

It then follows that the solvent plays an important part in the process of vulcanization. Normal adsorption curves were obtained with carbon tetrachloride and carbon bisulphide as solvents, but not with ether, benzene or chloroform. This was probably due to the occurrence of a side-reaction between the sulphur chloride and the solvent. The adsorption coefficient seems to be proportional inversely to the solubility of the rubber in these solvents. The diminution in the adsorption of sulphur chloride produced by previously soaking the rubber in the solvent used is much smaller for poor than for good solvents of rubber.

When samples of rubber vulcanized in the above fashion were soaked first for 24 hours in benzine, then for twelve hours in acetone, and extracted for three days with boiling acetone, about two thirds of the adsorbed sulphur monochloride was removed, the relative proportion of chlorine lost being greater. The ratio of sulphur to chloride, which is 1.108 for sulphur monochloride, was, after extraction as above, for rubber vulcanized with pure sulphur monochloride, 2.03, with a 50 per cent solution in benzine 1.66, with a ten per cent solution 1.69, with a five per cent solution 1.38, while for the technical product this ratio was 1.061.

The gain in weight of rubber after vulcanization and extraction with acetone was greater than that calculated from the sulphur and chlorine content, and it appears that some additional product, probably of acetone with rubber, was formed. To obtain the actual weight of rubber in an analysis of an acetone--extracted vulcanized sample, it is necessary to multiply the weight found by analysis by 0.74. After extraction of the more highly vulcanized samples of rubber with acetone, the sulphur content had a mean value of 33.66 per cent, of which 26.74 per cent could be oxidized to sulphuric acid by means of bromine water. The percentage of chemically combined sulphur was therefore 6.65 per cent and the final product had probably the composition $(C_{10}(C_{10}H_{18})_4S_2$.

The important original article from which this detailed abstract is taken was published in the Journal of the Russian Physico-Chemical Society, volume 53, pages 20 to 64.

The Use of Rubber Latex as a Paper Size

By A. van Rossem and W. Frenzyl

There have been quite a few papers and reports published within the last year on the use of rubber latex in the manufacture of paper and on the advantages that may or may not accrue from this use. Not only American journals but foreign journals as well, particularly the English journals—for the idea of employing latex for this purpose was originated by the Englishman, Kaye—have engaged in what may be called a scientific controversy regarding the value of rubber latex for paper manufacture. In the United States the opinion seems to be generally held that rubber latex has no future as far as the paper industry is concerned. The writer recently interviewed an executive of one of the largest paper concerns in the world and learned from him that after extensive investigations, this concern had come to the conclusion that there was nothing to be gained commensurate with the cost by the incorporation of rubber latex with paper pulp and the manufacture of paper.

It would accordingly seem out of place to publish a translation of a paper on this much mooted subject. But, this particular paper has been written by two investigators who are connected with the Government Testing and Experimental Laboratory in Holland and its official character as well as the fact that the results have led to entirely opposite conclusions in favor of the use of the latex in paper manufacture have influenced the Editors to publish it here in full. Whether this will reopen the discussion or not remains to be seen. At all events it is a work which is worth the careful attention and study of both rubber and paper technologists and executives. TRANSLATOR.

THE purpose of this investigation was to determine what effect, if any, the addition of rubber latex had on the properties of paper which was made from a pulp that had been previously mixed with the rubber milk in the manner of a size. The finished paper was examined to determine its resistance to folding, its tearing length, the elongation, the hygroscopicity, the degree of sizing quality and its writability, that is the ability of paper to resist penetration by ink.

The experimental investigations were carried out in the Botanical Laboratories of the Government Testing Bureau in Delft, Holland and in part in the Paper and Cellulose Laboratories of the Technical High School in the same city. Two series of tests were carried out, the second of which was used as a control of the first, so that checked results were obtained.

Making the Paper

Bleached sulphite cellulose was used in making the paper that was employed in these experiments. Rosin size and alum (papermaker's) were also used. Latex of standard quality was employed. A small experimental beater was available for mixing the pulp with the latex. One kilogram of the air-dried chemical pulp was beaten in 41 liters of water. The chemical pulp contained 7.8 per cent of water. The concentration of the stock in the beater was accordingly 2.25 per cent. After the pulp had been beaten for a period of two hours, it attained a degree of hydration equivalent to 45-48 degrees on the Schopper-Riegler scale.

The following solutions were then prepared:

1. First 45 grams of rosin size were dissolved in warm water and then diluted to make a volume of two liters.
2. Two hundred grams of sulphate of alumina were dissolved in two liters of water.
3. Latex, containing 35.4 per cent of rubber and 20 cubic centimeters of a 20 per cent solution of ammonia to the liter.

In making the papers used in the experiments three liters of the paper stock which had been beaten in the beater, thus containing 80 grams of absolutely dry chemical pulp, were in each case diluted with three liters of water and then further mixed under constant agitation with the requisite amount of the rosin solution or the rubber latex as above, which was first diluted to one liter before use. Then after the mixture was allowed to remain for fifteen minutes, so that the ingredients had become thoroughly incorporated with one another, the requisite amount of the alum solution, first diluted to one liter, was added. After fifteen minutes the entire mass was diluted again to make a total volume of 25 liters and a sample of paper was made from the pulp to have a weight of from 55 to 65 grams per square meter.

Various Samples of Paper Made

The following different kinds of paper were made under conditions that were maintained as constant as possible, so that an equitable comparison of the properties of the paper was possible.

1. Paper which was not sized at all.
2. Paper made from stock which contained one, two and three per cent of rosin size.
3. Paper made from stock which contained one, two and three per cent of rubber latex.
4. Paper made from stock which contained one per cent of rosin size and one per cent of rubber latex.
5. Paper made from stock which contained two per cent of rosin size and two per cent of rubber latex.
6. Paper made from stock which contained three per cent of rosin size, and three per cent of rubber latex.

In every case, with the exception of the paper in which no size at all was used, an equal amount of sulphate of alumina was added. This was 10 grams of sulphate to 80 grams of the chemical pulp. This is a decided excess in comparison with the amount of rosin and rubber latex used in making the paper.

Testing the Paper

The various papers, that were made in this manner were tested under conditions that were maintained constant throughout the research. The results that are included in the tables that form a part of this report, are the average of at least five separate tests, in most cases of ten individual observations. Tables A, B and C are given below.

TABLE A.

***Unsized Paper with one, two, three and six per cent of rubber latex in the stock.* (55 *to* 65 *grams per square meter*).**

Rubber in Stock in per cent	Double folding test	Tearing length (on absolute dry material) in meters.	Elongation in per cent	Moisture content in per cent	Sizing Quality	Writability
0	34	5435	4.0	6.9	none	none
1	26	4921	3.7	6.3	none	none
2	45	5063	4.4	5.9	slight to none	none
3	51	5092	5.1	5.4	slight to decided	moderate to good
6	106	4988	4.6	5.7	decided	good

TABLE B.

***Paper without and with one, two and three per cent of rosin size, but without any rubber latex.* (*Weight* 55 *to* 65 *grams per square meter*).**

Rosin content in per cent	Double folding test	Tearing length (on absolute dry material) in meters	Elongation in per cent	Per cent moisture	Sizing Quality	Writability
0	34	5335	4.	6.9	none	none
1	17	4488	3.4	6.8	slight to none	none to moderate
2	15	4345	4.3	6.1	slight	moderate
3	21	4164	4.4	6.3	decided to slight	moderate to good

Papierfabrikant, 1923, 425-29.

TABLE C.

Paper without and with one, two and three per cent of rosin size and one, two and three per cent of rubber latex. (Weight 55 to 65 grams per square meter)

Rosin in per cent	Rubber latex in per cent	Double folding test	Tearing length (on absolute dry material) in meters	Elongation in per cent	Moisture in per cent	Sizing quality	Writability
0	0	34	5435	4.	6.9	none	none
1	1	27	4423	4.2	6.2	slight	none to moderate
2	2	49	4969	4.3	6.5	decided	moderate to good
3	3	74	4786	4.7	5.6	decided	good

The tests were carried out in the usual manner. Only the following special points need to be mentioned. The impression of the screen or wire was clearly evident in the various paper samples. The testing strips, which were used in making the tearing length test, were accordingly cut in the direction of the narrower dimension, in order to avoid having deeply impressed lines in the sample of paper which are able to materially affect the accuracy of the tearing test. In making the folding test with the Schopper folder, errors can be even more readily introduced into the determinations in this way. In order to avoid them the samples of paper were cut at an angle of 45 degrees.

Discussion of Results

A comparison of the results obtained in the three series of experiments, which have been described in detail above, will readily shows the effect the addition of rubber latex brings about in the finished paper. In each case a sample of paper was made without the addition of rubber latex or other sizing from the sample chemical pulp and under the same conditions. This makes it possible to tell exactly what effect is produced in the paper by the addition of the latex.

In the first place on examining the results in the above tabulations under the column, headed "double folding "test," it will be seen that the addition of latex in proportions of over one per cent has a marked effect in increasing the number of foldings that the paper will stand without tearing. On the other hand, from Table B it can be seen that the addition of rosin size has a decidedly unfavorable effect on the strength of the paper as indicated by this test. The net conclusion that may be drawn from this part of the experiments is that the resistance of the paper is dependent in the first place on the inherent properties of the paper fiber, but that it is favorably affected by the addition of rubber latex to the paper pulp. On the other hand when both rosin size and rubber latex is added to the paper, as may be expected, while the strength of the paper is increased, this increase is considerably less than where rubber latex was used alone. In other words rubber latex is far more suitable for increasing the strength of paper than rosin size.

When it comes to the consideration of the tearing length, another condition applies. Due to the fact that the weight of the paper is increased by the addition of rosin and rubber latex, the tearing length is somewhat reduced by the addition of these materials. However this decrease is less in case of the rubber latex than in that of the rosin size. This substantiates the above conclusion that the strength of the paper is primarily dependent on the character of the paper fiber. It must however be remembered that this test is not an absolute measure of the real strength of the paper, for in arriving at the results, which are given in the tabulations, consideration must be taken of the weight of the paper. The increased weight, due either to rosin size or rubber latex, does not connote a correspondingly great increase in the strength of the paper, as determined by this test.

As far as the elongation at the point of rupture is concerned, the addition of rosin size or rubber latex is unimportant. The results show that there is very little difference between the various papers tested. The reason for this is that this property of the paper is almost solely dependent on the character of the pulp fibers from which the paper was manufactured.

The hygroscopic properties of the papers, that is their ability to absorb moisture, are not affected in any appreciable way by the addition of the rubber latex in accordance with the results given above.

Rubber latex, on the other hand, has not so strong an effect on the sizing quality or ability of the paper to retain ink writing as rosin size. This may have been expected for rosin size is known to be the most effective of all sizing agents. However when rubber latex is used in comparatively large amounts, which are greater than what is necessary to produce good sizing properties in the paper in the case of rosin size, a sufficiently well sized paper is produced. But the increased cost of the paper will not compensate for any advantage that may be gained. Hence it does not appear likely that rubber latex has any future as a sizing agent for paper in the place of rosin size.

Second Series of Tests

In order to substantiate the aformentioned results and also to act as a control, a second series of tests were made in the following manner. It was thought desirable to use a paper which was stronger than the paper tested in the first series, as indicated by the folding test, as in the second case the variations of the individual results from the average value would be greater. Furthermore in order to determine if the size had any effect on the flow of water through the wire the degree of beating of the paper stock, from which the paper was made, was determined.

In making the paper the stock was beaten until it showed a beating degree of 62 on the Schopper-Riegler scale. Four liters of the beaten chemical pulp were then diluted in each experiment with 30 liters of water and from this density of stock the sample of paper was made. This was done in the regular way, generally employed in making hand-made paper samples. The samples were transferred to a piece of felt and dried. The air dry weight of the paper was between 70 and 110 grams per square meter.

The sizing material was added to the stock before it was diluted. Sulphate of alumina was added to the stock until the liquid just reacted acid to litmus paper. The rubber content of the stock was accordingly plus or minus three per cent on the weight of the dry stock.

Four different samples of paper were made. In the first place an unsized paper was made containing neither rubber latex nor rosin size; then a paper with three per cent rosin, another with three per cent of rubber latex and finally one with both three per cent rubber latex and three per cent rosin size.

Examination of the Papers

These papers were then examined in the same manner as in the first series of experiments. The results obtained are given in the following tabulation:

	Number of double foldings at 70 gr. per sq. meter	at 110 gr. per sq. m.	Tearing length (absolutely dry wt.) meters	Elongation in per cent	Moisture in per cent	Sizing Quality	Degree of beating
D. Unsized paper	31	63	6180	2.1	8.6	none.	23
F. Paper with three per cent rosin size	17	57	5790	2.2	7.1	decided.	28
G. Paper with three per cent rubber latex	51	139	5710	2.3	7.8	moderate to decided	30
H. Paper with three per cent rosin size and three per cent rubber latex	70	509	6510	2.6	7.6	decided.	29

(The paper stock used in making these papers was Ia bleached sulphite pulp.)

Discussion of the Results

A general comparison of the results obtained by testing papers A, B and C with those of papers F, G, and H shows that the conclusions which were drawn in the first instance are substantiated by the second series of experiments. The addition of rosin size and of rubber latex seems to produce the same results in the case of the heavier papers of the second test as they did on the lighter papers of the first test. The conclusion that the strength of the paper is dependent for the most part on the charater of the fiber of the pulp from which it is made and only to a secondary extent on the sizing or rubber latex that is added to it is emphatically substantiated by the results of the second test.

As far as the degree of beating is concerned, the addition of rosin affects an incerase of 22 to 30 per cent and this increase is somewhat greater when rubber latex is used. In

other words the addition of these materials retards the flow of water through the wire.

Resume

The addition of latex to paper pulp has a marked effect on the properties of the paper that is made from this stock, even when the latex is added in the small proportion of two per cent. This influence is most marked on the number of double foldings that this paper can be subjected to without tearing, on the tearing length and on the elongation at rupture. It is much more favorable in comparison with the action of rosin size on the paper. It must be mentioned that the rubber content will be smaller in air dried papers. The hygroscopicity of the paper is somewhat reduced by the addition of rubber latex. On the other hand the sizing quality of the latex paper and its ability to hold ink are not so good as when rosin size is used.

There are of course quite a number of questions that remain unanswered and quite a number of problems that remain to be solved, as for example the surface sizing of paper with latex and the results that are obtained thereby, the effect of the latex on the fastness of the color of the paper, on its fastness to light, the life of the paper, its resistance toward atmospheric influences, and on the change in the properties of paper in drying and calendering when rubber latex is added to it. All of these problems are being investigated at the present time in the Delft Institute and the results will be published later.

Determination of Latex in Paper

This piece of work was carried out in the Government Laboratories for Rubber Research in Delft, Holland, and is important in having evolved a method which can be used to good advantage in determining the proportion of rubber in paper.

Three paper samples were taken. One paper contained neither rubber latex nor rosin size, the second paper contained three per cent of rubber latex, calculated on the dry weight of the paper and the third contained three per cent latex and the same proportion of rosin size.

After the samples were weighed, they were subjected to extraction with acetone for a period of ten hours. This was for the purpose of removing the rosin. Then the extracted paper mass, without preliminary drying, was extracted with benzol. To accomplish this the paper must be left over night in a quantity of benzol. Then the benzol solution was boiled in a flask, provided with a reflux condenser, for two to three hours. The benzol was then evaporated and the residue weighed. Then the paper mass is extracted again and the solution was evaporated to five cubic centimeters and then mixed with one hundred cubic centimeters of alcohol. In this way no coagulation took place, but a finely divided mass is obtained, which is filtered over asbestos and then dried and weighed.

The first extraction with benzol in the second sample of paper gave a result of only 1.04 per cent. As the possibility of the extraction being incomplete had not been excluded, the extraction was repeated four times. The results, which were obtained by evaporation and coagulation, are given in the following tabulations.

TABLE I.

Benzol extraction of paper 2 (after extraction with acetone).

	Percentage of rubber in paper found	
	By Evaporation	By coagulation
One extraction	1.04 per cent	1.04 per cent
Second extraction	0.63 per cent	0.24 per cent
Third extraction	0.38 per cent	0.03 per cent
Fourth extraction	0.12 per cent	0.00 per cent
Total	2.17 per cent	1.31 per cent

From these results it can be seen that after two and even three hours' digestion, the extraction is still incomplete and it is only after the fourth extraction that all of the rubber is removed from the paper fibers. This behavior of the rubber latex paper is entirely contrary to what is expected, as the rubber is present in the paper in a very finely sub-divided state and it is to be supposed that rubber in this condition would easily dissolve in the solvent.

For this reason the paper sample 3 was digested twice with benzol, the digestion lasting eight hours each time. This seemed to be sufficient as the second digestion removed less than 0.1 per cent of rubber from the paper fibers.

The results of the second test are given in the following table:

TABLE II.

Determination of the percentage of rubber in latex paper.

	Paper sample without rosin or latex	Paper sample with latex	Paper sample with rubber latex
Acetone extract in per cent	0.7	0.7	3.1
Total benzol extract (evaporated) in per cent	0.03	2.2	2.7
Total benzol extract (coagulated) in per cent	0.0	1.3	2.1

From these results it is clear that in the second case, paper made with three per cent rubber latex, 2.2 per cent was found by analysis, 0.8 per cent being lost in the water used in beating the stock. In the paper where both rosin and rubber latex were used, 2.7 per cent rubber was found, indicating a loss of 0.3 per cent of latex. It is also easy to see that more accurate results are obtained by the evaporation method.

Efficiency of Factory Day Workers

From a survey made this summer of several factories in city districts, the conclusion is reached by the Business Research Bureau of LaSalle Extension University that there is an apparent desire on the part of workers to "taste and try". That is, they work for a day or so and then leave for another job. This tendency is laid largely to the loose, radical propaganda being spread among them, and which is creating an unrest among the old employes as well. Among the unskilled types of labor, the more workers are paid the less likely they are to work steadily. This is because the worker does not look to the future. Thus, if in two days he can make what he formerly made in six, he may work three days and spend the remaining time running about having a good time. This conclusion is general for all large cities.

The problem that factories in city districts are meeting is how to increase the efficiency of day workers to overcome the loss of output caused by a high labor turnover.

If the factory has no adequate inspection system, the efficiency of new help cannot be materially increased. However, if the workers can be inspired with the idea that they owe something to their craft and its standards, and to the company employing them, the efficiency of the workers can be materially increased. The "devil-may-care" attitude must be done away with because where that exists, any system becomes a "hit or miss" proposition.

The personality of the executive directly in charge of the workers today either has a great deal to do with the increasing of the efficiency of the workers, or he produces exactly the opposite results. A superintendent should endeavor to discover men in his organization who are ambitious to advance themselves. These men should then be prepared for the responsibility of positions of leadership.

When the proper moment arrives, the superintendent should remove the foreman with the undesirable personality, and replace him by one of these inspired and properly educated leaders.

Some factories have successfully adopted the compromise bonus-plan to solve this problem. The workers are paid a pro rata amount for all work done above a fixed standard with the understanding that any improperly finished work will reduce the bonus paid. When this bonus is arranged as a group proposition it has given excellent results in such manufacturing concerns as foundries, automobile factories, shoe factories, etc.

H. P. Stevens Writes About Previous Tests on Accelerated Aging

LETTERS

From THE RUBBER AGE Readers

Suggestion That A Single State Be Selected for Mail Test

Accelerated Aging of Rubber

EDITOR, THE RUBBER AGE:

In reference to the paper by B. Marzetti entitled the Accelerated Aging of Vulcanized Rubber and published in the Sept. 10th., issue of your Journal, I would like to draw attention to the diagrams showing the comparison of a series of stress strain curves of aged samples cured for varying periods. The most fully vulcanized samples show loss of tensile properties from the commencement of aging whereas the less cured samples show an initial improvement subsequently followed by loss of tensile properties.

I was interested in this diagram and the figures given as it illustrates the fact that artificial aging at 77°C produces an exactly similar effect to natural aging at room temperature. In the Journal of the Society Chemical Industry for December 31st, 1918 (Vol. 37, pages 340-342 T) I published a paper entitled the Aging of Vulcanized Plantation Rubber. The results of different aging periods in weeks were plotted against the tensile strength and elongation (the product of the two gives the tensile product referred to by Marzetti). My curves are drawn freely from the figures and show the same effect.

The fully vulcanized samples show a loss of tensile strength from the very commencement of the aging period. With shorter cures, that is lower coefficients, an initial improvement takes place. The curves also show that to obtain the maximum tensile strength the rubber must be cured to a stage at which there is little or no initial increase in tensile strength on aging.

The curves illustrated in Marzetti's paper point to a similar conclusion No. 4 which was cured for the shortest time gives a lower maximum figure than samples 2 and 3 which were cured for longer periods.

HENRY P. STEVENS

London, England.
Oct. 30, 1923

Selling Tires by Mail

Editor, THE RUBBER AGE:

The article in your issue of October 25, 1923, "Conditions Favor Direct to Consumer Tire Sales", by H. P. Wilkin, is well written and can be easily understood even by the ordinary layman not familiar with the tire game.

The writer has had experience as tire jobber, manufacturer, and retailer, and can state from actual experience, the result of "Direct to the Consumer Tire Sales", its advantages, problems and difficulties.

The large nationally known manufacturer whose brand or trade name has been before the public for many years by intensive national advertising campaigns, not only creates a demand for his product through the medium of this advertising, but also creates a demand due to the fact that almost without exception his particular brand of tires can be secured in practically every city, town, village, or hamlet in the United States through the medium of tire dealers. This tire dealer is a tremendous asset, and it is the one aim and ambition of every manufacturer to secure as many such dealers as is possible. Should a manufacturer, at one swoop put into effect a direct to the consumer campaign, entirely eliminating his former dealers, he would necessarily start thousands of dealer knockers into action at the same time, with the eventual result of a great reduction in his sales.

In the instance of which the writer has personal knowledge, the manufacturer of an entirely new brand had as a basis of sales outlet, over 1200 dealers whom he had sold as a jobber of other brands, and who were perfectly willing and anxious to act as local dealers for him even with this new brand that he was manufacturing. These local dealers had known the manufacturer for several years when he acted as a jobber. They had faith in his product and it was a good product. After two years of hard sledding, due to the general conditions that existed in the tire industry as a whole, this manufacturer felt that he was strong enough to go to the consumer direct. He started such a campaign. For a while things looked promising but gradually the knock, knock, knock of the former local dealer was seriously felt, so much so that the manufacturer thought it wise to try to re-interest the dealer by changing again and making a fifty-fifty proposition. His plan was this: Where he could secure a dealer to carry his line he would sell to him at the regular direct to the consumer price. The dealer would sell at a slightly higher price and take a much smaller profit than he had been getting before. Where he could not get a dealer the manufacturer intended to continue his direct to the consumer plan unchanged. Sales dropped continually from the time he made this second change until he decided definitely to adopt either the dealer or direct to the consumer plan as a permanent policy. He decided to go back to the dealer but found that he could not do so in enough cases to keep his factory running. The result was an average sale of 50 tires a day from a factory originally built and equipped to produce 1500 tires each twenty-four hours.

The one nationally known manufacturer who possesses the requisite nerve and financial wherewithal to forget his former dealer and start a direct to the consumer campaign would suffer tremendous pressure, not only from his former jobber and dealer, but from the knocking of the other large manufacturers.

Mr. Wilkin writes that the man who buys high grade tires will buy through the mails. Will he? Just what is the psychology attached to the responses of the blatant sheets put out by the mail order houses—not the old established houses, the two largest of which are in Chicago, but the houses of doubtful origin, doubtful finances, decidedly doubtful brands, who make no effort to hide the fact. The patrons of such mail order houses have a feeling that they are taking chances but they bite and go back for more. Why? One can not answer such a question. The fact remains, however, that questionable as it may be the mail order house selling seconds, off brands, damaged stock, bankrupt stock, are seldom able to supply the same brand for two consecutive orders and are flourishing and always will as long as there are some manufacturers who will make them a junk private brand tire, or as long as they can buy seconds or damaged and bankrupt stock. It is very seldom that any mail order house of the character named above sets forth in its circulars the truth about its merchandise, namely that it is of an inferior nature.

It would appear to the writer that it would be a sane, feasible, and a reasonably profitable venture, for some sound tire manufacturer who has steadily for many years been making a high grade piece of merchandise and who can show such facts without fear of contradiction, and who has not carried on a campaign of national advertising, to select some state in which he has not already gone after the dealer business and establish in its most logical trade center a warehouse, and then go after this direct to the consumer trade. Eventually he will either build up a substantial mail order business in a territory in which he was never before active thus enabling him to put all his effort on the same plan, or he will fail and in so doing will not injure the business he already has.

There are many well financed factories who could do this. It would be interesting to watch such a plan.

B. A. RHEINSTROM, Pres.
Sirod Corporation.

Minneapolis, Minn.
November 2, 1923.

RUBBER STATISTICS

Import **Production** **Export**

Importations of Crude Rubber into the United States During October, 1923

Figures compiled and distributed by The Rubber Association of America, Inc.

(Estimated net weights—long tons)

PLANTATIONS

FROM	TONS
Batavia	1,417
Belawan-Deli	1,583
Colombo	1,790
Genoa	10
Japan and Others	72
London	21
Malacca	422
Penang	1,965
Pt. Swettenham	1,006
Rotterdam	77
Singapore	9,688
Sourabaya	677
	18,728

AFRICANS

FROM	TONS
Antwerp	8
Bordeaux	51
Hamburg	82
Liverpool	14
	155

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	106
Guayule (Mexico)	139
Guayule Additional Sept.:	124
	369

PARAS

Manoas	171
Montevideo	39
Para	200
	410

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

Waste	90	Miscellaneous Gums	469
Balata	99		

Comparison 1922-1923

	OCT.-1922	OCT.-1923	Total Importations 10 months ending, OCT. 31. 1922	1923
Plantations	22,386	24,728	219,311	250,107
Paras	957	410	8,158	9,773
Africans	599	155	1,677	3,075
Central	3	106	51	493
Guayule	—	263	281	1,079
Manicoba and Matto Grosso	—	—	122	68½
	23,945	25,662	229,600	264,595½

ARRIVALS PLANTATIONS FOR OCTOBER, 1923, SHOWING PORTS OF ORIGIN AND ARRIVAL

FROM	ARRIVED AT	TONS
Batavia	New York	1,417
Belawan-Deli	New York	1,583
Colombo	Boston	88
Colombo	New York	1,702
Genoa	New York	10
Japan and Others	New York	59
Japan and Others	Seattle	13
London	Boston	6
London	New York	15
Malacca	New York	374
Malacca	San Francisco	48
Penang	Boston	158
Penang	New York	1,807
Port Swettenham	New York	1,006
Rotterdam	Boston	15
Rotterdam	New York	62
Singapore	Boston	781
Singapore	Los Angeles	134
Singapore	New York	8,710
Singapore	San Francisco	63
Sourabaya	New York	677
		18,728

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports		
Boston	1,048	
New York	23,422	
		24,470
Pacific Ports		
Los Angeles	134	
San Francisco	111	
Seattle	13	
	258	
		18,728

Report of Rims Inspected and Approved By The Tire & Rim Association of America During Month of October, 1923

SIZE		NUMBER	PCT
26 x 3		4570	0.2
28 x 3		5149	0.3
30 x 3		107417	5.5
27 x 3½	S.S.	6991	0.4
30 x 3½	Clin.	905695	46.0
30 x 3½	S.S.	267208	13.6
32 x 3½		21951	1.1
28 x 4		2829	0.1
30 x 4		41	0.0
31 x 4	Clin.	172128	8.7
31 x 4	S.S.	342	0.0
32 x 4		270375	13.7
33 x 4		18248	0.9
34 x 4		3714	0.2
29 x 4½		6228	0.3
30 x 4½		45	0.0
31 x 4½		42	0.0
32 x 4½		134803	6.8
33 x 4½		530	0.0
34 x 4½		17716	0.9
36 x 4½		879	0.0
30 x 5		335	0.0
34 x 5		16876	0.9
32 x 6		1904	0.1
36 x 6		1116	0.1
34 x 7		318	0.0
38 x 7		1225	0.1
36 x 8		259	0.0
40 x 8		1382	0.1
Total		1,970,316	100.0

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires

May, 1922 to Sept., 1923

"Production" and Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

(Compiled by The Rubber Association of America, Inc.)

	PNEUMATIC CASINGS				INNER TUBES				SOLID TIRES			
MONTH	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
May, 1922	65	5,523,095	2,721,503	2,639,273	65	7,189,552	2,970,696	2,938,947	11	170,904	57,640	60,711
June, 1922	64	5,042,147	2,838,890	3,133,260	64	6,186,534	3,130,629	3,973,679	11	169,808	66,089	63,408
July, 1922	63	4,834,106	2,476,636	2,695,095	63	5,675,839	3,068,199	3,630,744	11	176,375	71,505	60,425
August, 1922	63	4,629,392	2,905,209	3,029,823	63	5,207,228	3,808,224	4,220,055	11	189,698	84,313	69,435
September, 1922	64	4,612,037	2,504,744	2,502,106	64	5,164,757	3,501,442	3,558,971	11	200,016	82,767	66,797
October, 1922	64	4,682,958	2,674,662	2,588,770	64	5,488,033	3,787,758	3,420,680	11	213,942	85,480	71,275
November, 1922	62	4,964,976	2,733,134	2,379,708	61	6,210,053	3,850,908	3,075,023	11	234,684	85,775	61,466
December, 1922	59	4,599,208	2,656,942	2,934,079	59	5,732,125	3,411,074	3,825,949	10	244,061	77,221	64,570
January, 1923	62	4,695,916	3,127,270	2,994,297	62	5,838,310	3,951,885	3,748,651	11	262,462	83,383	60,611
February, 1923	60	5,224,387	3,217,987	2,588,639	60	6,771,958	4,039,202	3,001,697	11	270,191	75,457	63,394
March, 1923	58	5,670,601	3,865,726	3,322,637	57	7,740,945	4,875,414	3,828,315	11	265,843	79,788	77,144
April, 1923	56	6,088,272	3,539,326	2,976,160	55	8,394,184	4,259,558	3,535,635	11	260,631	71,468	72,609
May, 1923	57	6,906,594	3,659,986	2,757,764	57	9,292,223	4,317,537	3,414,115	10	268,323	77,288	67,147
June, 1923	55	7,040,600	2,956,943	2,502,185	54	8924,326	3,590,011	3,581,060	10	283,425	72,445	52,126
July, 1923	54	6,471,124	1,992,989	2,534,425	52	7,396,444	2,625,118	3,942,247	10	263,891	42,345	45,219
August, 1923	58	6,058,387	2,355,915	2,807,432	53	6,950,578	3,577,922	4,304,034	10	262,810	48,141	45,925
September, 1923	60	5,397,557	2,029,581	2,623,775	55	6,457,455	3,254,575	3,683,514	10	249,379	37,074	45,971

1923 Imports of Hard Rubber Goods into the United States

From	January		February		March	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
Austria	11,065	13,490	3,600	2,613	9,360	9,861
Germany	8,455	5,258	9,538	10,387	7,717	10,651
Spain	....	....	30	14	....	....
France	....	....	....	....	302	783
Quebec and Ontario	....	....	....	....	45	102
British Columbia and Yukon	....	....	....	....	2	3
Total	19,520	18,748	13,168	13,014	16,426	21,400

From—	April		May		June	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
Austria	9,750	10,236	8,019	8,743	8,583	10,055
Germany	10,224	11,731	5,786	11,706	9,882	10,148
England	320	277	180	45	187	217
France	181	563	5	3	....	....
Quebec and Ontario	20	35	65	102	....	....
Total	20,495	22,842	14,055	20,599	18,652	20,420

From—	July		August		September	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
Austria	23,650	9,255	11,150	11,292	....	....
Germany	12,891	18,184	16,531	13,853	9,210	12,804
England	1	1	50	225	232	327
France	....	....	....	....	3	13
Quebec and Ontario	....	....	....	....	5	6
Brit. Columbia & Yukon	....	....	9	11	....	....
Czechoslovakia	....	....	60	174	....	....
China	....	....	....	....	2	5
Total	36,542	27,440	27,800	25,555	9,452	13,155

1923 Imports of Druggists' Rubber Sundries into United States

From—	January		February		March	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
Belgium	....	....	....	....	20	40
Germany	2,690	2,095	4,452	5,552	270	417
England	771	3,103	*	*	4,481	13,177
Quebec and Ontario	13,200	5,768	...	....	15	10
Japan	....	....	....	....	1	5
Total	16,661	10,966	4,452	5,552	4,787	13,649

From—	April		May		June	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
France	25	10	213	148	50	209
Germany	20	14	180	196	....	....
England	650	2,230	5,704	14,387	1,206	6,000
Quebec and Ontario	75	174	....	....	450	490
Japan	....	....	17	32	....	....
Total	780	2,428	6,114	14,763	1,706	6,699

From—	July		August		September	
	Pounds	*Dollars*	*Pounds*	*Dollars*	*Pounds*	*Dollars*
France	12	27	....	....	....	....
Germany	....	....	14	13	550	326
England	1,150	1,631	1,563	5,476	1,443	3,153
Japan	....	....	10	26	....	....
Total	1,162	1,658	1,587	5,515	1,993	3,479

*The amount and value of imports of "Druggists' rubber sundries" from England during February cannot be separated from "Other rubber manufactures" because of improper coding.

British Trade in Rubber

(Alfred Nutting, clerk in American consulate general, London.)

Although the quantity of crude rubber imported into the United Kingdom during the first six months of the current year, exceeded that for the corresponding period of 1922, it was still 35 per cent less than that of 1921. The slight increase over 1922, notwithstanding the high percentage rise in price, may reflect to some extent the effect of the Stevenson restriction scheme. London stocks, which have steadily fallen for some time past, stood, at the close of the week ended July 14, at 49,976 tons compared with 72,565 tons at the beginning of the year.

The following statement shows imports during the first half of 1922 and 1923:

Rubber imports into United Kingdom, first six months of 1922 and 1923

Source.	1922 Quantity. *Centals.*	1922 Value.	1923 Quantity. *Centals.*	1923 Value.
Straits Settlements	145,913	£568,948	314,432	£1,895,228
Federated Malay States	306,629	1,420,186	153,203	936,675
British India	41,257	182,634	43,416	268,523
Ceylon and dependencies	103,005	462,273	107,762	649,534
Dutch East Indies, except other Dutch possessions in Indian seas	53,740	231,731	58,394	348,416
Other Dutch possession in Indian Seas	22,140	100,553	8,702	56,603
Other countries in East Indies and Pacific n. e. s.	14,605	60,687	7,112	47,604
Brazil	37,777	162,542	37,762	217,863
Peru	....	....	688	3,206
South and Central America, other than above	1,115	4,299	879	4,483
West Africa:				
French West Africa	116	388	7,233	35,453
Gold Coast	72	255	337	1,475
Other parts	1,284	4,998	3,183	10,598
East Africa and Madagascar	699	2,474	3,075	16,991
Other countries	1,942	6,963	3,666	21,704
Total	730,294	3,208,931	749,844	4,514,356

The above statistics indicate that the imports from the Straits Settlements greatly increased in 1923 compared with 1922, while those from the Federated Malay States decreased. The imports of plantation rubber were only about 3,000 tons more this year from the Far East, while wild rubber increased by nearly 11,500 tons. Wild rubber has participated considerably in the upward price movement.

The details of reexport shipments during the first half of 1922 and 1923 are as follows:

United Kingdom's reexports of rubber, first six months of 1922 and 1923

Destination.	1922 Quantity. *Centals.*	1922 Value.	1923 Quantity. *Centals.*	1923 Value.
Russia	657	£4,431	9,669	£58,378
Sweden, Norway, and Denmark	7,296	27,729	8,833	55,667
Germany	103,864	401,173	70,132	426,937
Belgium	15,794	61,036	19,443	128,437
France	146,886	611,322	183,940	1,216,525
Spain	5,575	22,749	2,334	15,242
Italy	27,156	110,322	45,913	295,817
Austria	1,575	6,348	1	4
Hungary	27	112	451	3,421
Other countries in Europe	15,337	65,931	9,159	57,082
United States	309,719	1,321,384	565,275	3,872,533
Canada	6,288	23,083	28,801	193,350
Other countries	3,634	17,403	4,058	26,186
Total	643,808	2,673,023	948,009	6,349,579

It will be observed that the United States took about 60 per cent of the aggregate reexports this year, and that increased shipments were made to France, Italy and Canada. Shipments to Germany, however, show a decided reduction.

The Key to Correct Costs

It takes but little skill to determine exactly what the labor and material in a product cost, for these can be accurately measured with but little effort. Overhead expense is not so easily measured. It is inaccurate allocation of overhead that causes most inaccurate costs.

The pity is that the man who has an elaborate cost system may be getting wrong information from it, while believing that his cost figures are trustworthy. He who has no figures is better off than he who has wrong ones, for at least the first man knows that he is merely guessing.

No one method of getting overhead into the product will do for all industries nor for all concerns in an industry, but the same methods of gathering the costs fit all. Here are the fundamentals of correct accounting for overhead.

1. Gather overhead, not for the factory as a wohle, but for each department separately.

2. Charge the overhead of a department only to those items of production that are operated upon in that department.

3. Overhead is a charge that the product must pay to a department for the use of the facilities furnished by that department. These facilities may include floor space, heat, light, power, supervision, non-productive labor such as truckers and janitors and perhaps a rental for the use of machines. Therefore, it is important to determine a way to measure in dollars the use that the product has made of these facilities. It may be measured differently in every department. In one the man hour may be correct, in another the machine hour, the payroll dollar and so on. To determine the unit is a job for someone fully acquainted with the problems of production in the plant.

In plants where overhead is incorrectly spread over the product I have seen cases where costs were 50 per cent and more off. Some were too high and others too low by that much. Such a condition makes business too much of a gamble.

By William R. Basset, President, Miller, Franklin, Basset & Co., Inc.

TECHNICAL ABSTRACTS

Mechanical **Chemical** **Physical**

Products Resembling Gutta Percha

Rubber in the raw state, after the resins which are mixed with it have been removed, or else in the form of scrap, either vulcanized or unvulcanized, or a substance used in the manufacture of synthetic rubber, such as butadiens, its homologues or analogues, is intimately mixed with polymerizable substances which are able to effect condensation. The product that is obtained in this manner, bears a strong resemblance to gutta-percha, which softens below 100 degrees C and is readily fusible. Suitable substances are, for example, coumarons, indene, esters of acrylic acid, and soluble and fusible phenol-formaldehyde condensation products. (German Patent No. 375,639.)

Vulcanization Accelerator

Instead of mixing the magnesia with strong caustic lye, as the process is carried on in the original patent (German Patent No. 344,061), it is mixed with soap, oil soap, or sulphur oil soap, either in concentrated solution or in the fused state, until a dry soft powder is obtained. At the same time fusible accelerators, such as urea, thiourea, thiocarbanilide, or the like, are incorporated in the mass. The resulting product is not so sensitive to moist atmospheres as that made by the process described in the chief patent. The new patent is German Patent No. 375,776.

Rubber Latex

Rubber latex which nominally contains about 30 per cent of rubber can be concentrated by various methods. Thus, for example, it can be evaporated under reduced pressure, preferably after the addition of a little sodium hydroxide or carbonate. Centrifugal action at 30,000 revolutions per minute also produces a concentrated latex with up to 76 per cent rubber. This process however seems less promising for concentration than for separation of the latex into two fractions of distinct properties. The concentrated fraction of latex yields a tough rubber, while the weaker residue gives a product possessing very little strength. Concentration can also be effected by hydrolysis.

Coagulation of the latex by an acid occurs at a hydrogen ion concentration corresponding to p_H equal to 5.5. The "creaming" of the latex by the addition of a metallic salt, such as zinc acetate, is attributed to the formation of the zinc salt of heveic acid and the precipitation of the metallic proteinate. Relative to latex the gel-like product so formed exhibits an increased adherence of its rubber to cellulosic fabric. (Chemical and Metallurgical Engineering, 1923, volume 29, pages 184 to 187.)

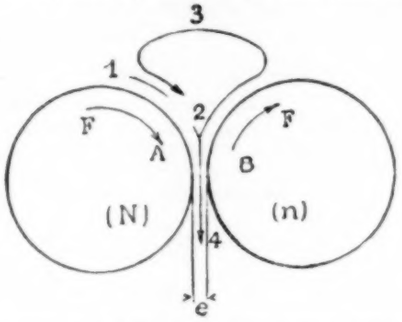
Rubber-Like Products

It is known that the di-olefines (divinyl, piperylene, isoprene, etc.) can be polymerized with or without the addition of alkaline metals or alkaline earth metals to give products which resemble rubber. According to German Patent No. 361,429 it is possible to polymerize the di-olefines to give a pure rubber, but the method also permits the preparation of rubber resins, terpenes or hydroterpenes. The di-olefines are mixed with vegetable oils and animal oils of various sorts which possess the property of polymerizing. For this purpose it is practical to use linseed oil, chinawood oil, perilla oil, castor oil, whale oil and in general those oils which possess a high iodine index. The polymerization process is accelerated by increasing the temperature and the pressure. Accelerators, such as metals, the chlorides of metals, their mixtures with the chlorides of the alkaline earth metals, may be added.

For example one hundred parts of chinawood oil and one hundred parts of 2, 3 dimethylbutadiene are mixed together until a perfect solution is obtained. Then ten parts of chloride of ammonia and twenty parts of anhydrous chloride of zinc are added. The mixture is strongly agitated. The mass becomes colored and swells up. It is necessary to cool it down. Then the mass is dissolved in benzine; the rubber is precipitated in the filtered solution by the addition of alcohol and the precipitate is washed by mixture with hot water which has previously been made slightly alkaline. The rubber is very elastic and non-sticky.

Rubber Mixing Device

The diagram shows a rubber mixing device of special construction which has been patented in French Patent No. 543,217. According to this patent the system used in the ordinary rubber mixer, in which two cylinders or rolls turn in opposite directions, is replaced by another in which there are two rolls



A and B as seen in the figure. These rolls rotate in the same direction but at different speeds. These speeds are indicated as N and n. The velocity N is greater than the velocity n.

The material which is to be mixed, takes the path 1, 2, 3, indicated in the figure. It is gradually drawn between the two rotating rolls in the direction 4. The normal place of the material is above the rolls and it does not fall below them. This effects a saving in labor. In addition thereto the mixed rubber is perfectly compact and homogeneous.

Recovering Old Rubber

British Patent No. 198,067 is concerned with a process for treating old rubber to render it suitable for manufacture into rubber articles. The old vulcanized rubber is rendered more suitable for re-manufacturing by comminuting, washing with hot water or a weak caustic soda solution, and then exposing the dried powder to an atmosphere of acetylene for a period of approximately two weeks. The powder is then washed with hot water in order to remove a soluble reaction product which has formed during the acetylene treatment and which apparently consists of that constituent of the old or perished rubber which gave it this property.

The treatment has been found to increase the resiliency of the rubber material and its value as an ingredient in the manufacture of rubber merchandise. In a similar manner rubber articles which have lost their resiliency may be restored to good condition and the aging of newly manufactured articles may be improved by washing, exposure to acetylene and re-washing. The plasticity of hard unvulcanized rubber may also be increased by swelling with a solvent and treatment with acetylene. The acetylene is best generated by the action of an aqueous solution of a carbohydrate, for example glucose on calcium carbide.

MARKETS

Cottons and Fabrics

NEW YORK, Nov. 15, 1923

Another rise which for a time threatened to carry cotton prices into new high territory for the year, drew its impulse from widespread rumors that less cotton has been ginned during the period ended Nov. 13 than a year ago, following the previous day's unexpectedly large census figures on cotton consumption. During yesterday's session December, March and May contracts were twice run up over the 34-cent level, but were unable to hold their gains in the face of a supply which was considerably more than existing buying power could readily absorb. Liverpool prices, however, made new highs for the year, the January contract there going to 19.65 d., this representing a spread of 600 points over the previous closing figures in New York, as against the previous highest difference this year of about 550 points.

Trading was again very active with wide prices swings, but each time values swept forward for substantial gains a flood of selling orders broke loose to check the advance. In the last half hour prices shot up 35 points to 34 cents in a final effort to make the goal, but were unable to hold. The list closed at net gains of 20 to 30 points for the day.

Since issuance of the Government crop report two weeks ago indicating a yield of 10,248,000 bales there have been numerous private estimates practically all of which have placed the crop below the official figures. One or two of these have been as low as 9,500,000 bales but the one which has made the greatest impression on the trade estimates a probable yield of 9,782,000 bales. All these predictions below the ten million bale mark have had the cumulative effect of attuning the market to a high pitch of nervousness, encouraging extreme speculative activity and making possible the wide price swings that have rushed cotton prices to more than 34 cents a pound, or the highest point since 1920.

Effect on Foreign Market

Moreover, the steadily dwindling crop outlook has had an electrical effect abroad. Not only have English prices risen to new high levels for the year, but the foreign trade is beginning to wonder how much longer America will be able to supply the needs of other countries. Those consumers are beginning to doubt whether this country will be able to raise more than 10,000,000 bales a year in the future which based on world's takings of American cotton last year would leave a deficiency of between 2,000,000 and 3,000,000 bales to be supplied by other sources. As a matter of fact foreign spinners have taken about 250,000 more bales of our cotton since Aug. 1, the beginning of the present crop year, than a year ago, or at the rate of 1,000,000 bales more this year than last. Figured on the basis of indicated yield plus carry over this would leave an actual shortage of close to 1,000,000 bales by the end of the year. These figures are not at all prepossessing from the point of view of the consumer of cotton products for they inevitably spell materially higher prices for raw cotton. Old time cotton men are predicting that the latter will go close to 44 cents a pound at which figure cotton sold just after the close of the war when conditions were patently less bullish than at present.

October Increased Consumption

Cotton consumed during October totaled 541,825 bales of lint and 57,128 of linters, compared with 483,852 of lint and 49,587 of linters in September this year and 533,744 of lint and 62,635 of linters in October a year ago, according to the Census Bureau. Consumption in October was larger than in any month since last June, but for the first three months of the cotton year it was about 27,000 bales less than during that period last year.

Exports of cotton in October exceeded those of September by 92,000 bales and for the first three months of the cotton year 275,000 bales more were exported than in the same period last year. Cotton on hand Oct. 31 was about 1,000,000 bales less than a year ago.

Week-end figures showed spinners' takings of 336,000 bales against 405,000 last year, making 3,076,000 for the season compared with 3,866,000 last year. The amount in sight was only 472,000 against 546,000 last year, making 5,136,000 for the season against 6,709,000 last year. The visible supply increased 136,000 bales against 140,000 bales last year bringing the total supply of American cotton to 2,930,000 bales compared with 3,811,000 a year ago.

Today's quotations were as follows:

	Open.	High.	Low.	Close.	Prev. Day.
Dec.	33.90	34.10	33.80	33.90@33.94	33.65
Jan.	33.55	33.77	33.43	33.50	33.25
Mar.	33.85	34.02	33.65	33.75@33.78	33.48
May	33.90	34.06	33.68	33.78@33.84	33.56
July	33.38	33.58	33.20	33.30@33.33	33.10
Oct.	27.90	28.10	27.90	27.90@27.94	27.70

EXTRA STAPLE COTTON

The best business in extra staples in the last three months has been done within the past few weeks. Tire manufacturers have increased their demand with the result that tire fabric mills have taken between 15000 and 20000 tons of which about 65% was Uppers and the balance Sak. In the past few days however, the rise in prices has resulted in a slow market with manufacturers awaiting developments which will show the possible future trend. Higher cotton prices in general however preclude any lower fabric prices.

Prices on extra staple cotton, strict middling in grade and color, f. o. b., New Bedford, were quoted today as follows:

1¼ inch, 36½ to 37½ cents.
1 3/16 inch, 37½ to 38½ cents.
1¼ inch, 38½ to 39½ cents.
1 5/16 inch, 40 cents upward.

TIRE FABRICS

Tire fabric mills have been curtailing production and in a few cases even closing down completely. Tire manufacturers have not been purchasing in quantity being content to cover current needs only. The result has been that whenever a buyer appeared quotations have been beyond the buyer's ideas. This condition is expected to hold until manufacturers come with the fabric market for larger commitments. Mills have reduced stocks with a one-day supply on hand in many cases. Prices follow:

CORD FABRICS			
Combed Sakellarides		Nominal	
Combed Peeler	lb.	.64 @	.69
Carded Peeler	lb.	.64 @	.69
Combed Egyptian uppers	lb.	.75 @	.80
Carded Egyptian uppers	lb.	.72 @	.75
SQUARE WOVEN			
17¼-ounce Egyptian uppers, combed	lb.	Nominal	
17½-ounce Egyptian uppers, carded	lb.	.64 @	.67
17¼-ounce Sakellarides, combed	lb.	Nominal	
17½-ounce Peeler, combed	lb.	Nominal	
17¼-ounce Peeler, carded	lb.	.59 @	.62

DUCKS—Some business was reported in belting and hose ducks at the new price of 53 cents. The higher prices have prevented bids and offers, each side awaiting future action in cotton. In the last few days interest has been keener with a number of sales reported at slightly shaded prices.

SHEETINGS			
40-inch 2.50-yard	yd.	.18¾ @	.19
40-inch 2.85-yard	yd.	.16¾ @	.17
40-inch 3.15-yard	yd.	.16½ @	—
40-inch 3.60-yard	yd.	.14 @	.14¼
40-inch 3.75-yard	yd.	.13½ @	.13¾
40-inch 4.25-yard	yd.	.12 @	.12¼
DUCKS			
Belting	lb.	.53 @	.55
Hose	lb.	.53 @	.55
Enameling	lb.	.56 @	.63
Shoe Ducks	lb.	.59 @	.62
Single filling	lb.	.24½ @	.27
Double filling	lb.	.26½ @	.29
BURLAPS (Carload Lots)			
7½-ounce 40-inch		6.10 @	6.40
8 -ounce 40-inch		6.25 @	6.65
10 -ounce 40-inch		7.55 @	7.60
10½-ounce 40-inch		7.65 @	7.80
DRILLS			
37-inch 2.75-yard	yd.	.16¾ @	.17¼
37-inch 3.00-yard	yd.	.16 @	.16¼
37-inch 3.25-yard	yd.	.15¼ @	—
37-inch 3.50-yard	yd.	.14¾ @	—
37-inch 3.95-yard	yd.	.12⅞ @	.13
OSNABURGS			
30-inch 7-ounce		.17¾ @	.18
40-inch 7-ounce		.18 @	.18½

Chemicals and Compounding Ingredients

THE INDUSTRIAL CHEMICAL MARKET—NEW YORK, Nov. 19, 1923.—On a whole the market for industrials has been quiet. Production of rubber goods is usually stagnant at this time of the year and the present conditions in the industry have not permitted of large trading or contracts in chemicals. In some quarters contract withdrawals have been heavy, especially in caustic soda, but for the larger part small spot business has been the rule. Prices are at a standstill which points to higher prices when the demand increases. Stocks are ample in most lines to take care of present demands. Exports have been only fair. Buyers are taking care of immediate requirements and are not stocking up heavily at this time.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .90	@	.95
Aniline oil, drums	lb.	.17	@	.17½
Diphenylguanidine	lb.	1.10	@	1.15
Excellerex,	lb.	.45	@	.50
Formaldehyde-Aniline	lb.	.52½	@	—
Hexamethylene-tetramine	lb.	.75	@	.85
Paraphenylenediamine	lb.	1.40	@	1.50
Super-Sulphur No. 1	lb.	.50	@	.60
Super-Sulphur No. 2	lb.	.25	@	.35
Tetramethyl—Thiuramdisulphide	lb.	6.00	@	—
Thiocarbanilide, kegs	lb.	.28	@	.30
Vulcocene	lb.	.35	@	—

Inorganic

Lead, sublimed blue	lb.	.09¼	@	—
Lead, white	lb.	.08¾	@	.09¼
Litharge, domestic	lb.	10.40	@	—
Lime, Superfine	lb.	.02	@	.02½
Magnesia, calcined, light,	lb.	.23	@	.24
extra light	lb.	.45	@	—
heavy	lb.	.05	@	.06

COLORS

Blacks

Bone Black	lb.	.05½	@	.07½
Carbon "	lb.	.07½	@	.10
Drop "	lb.	.07½	@	.10
Ivory "	lb.	.15	@	.45
Lamp "	lb.	.12	@	.40
Micronex		.16	@	.18

Blues

Cobalt	lb.	.21	@	.26
Prussian	lb.	.46	@	.50
Ultramarine	lb.	.08	@	.35

Browns

Iron oxide	lb.	.04	@	.05½
Sienna, Italian,	lb.	.06	@	.14¼
Umber, Turkey,	lb.	.04	@	—
Vandyke, domestic	lb.	.03½	@	.04

Greens

Chrome, light	lb.	.28	@	.31
medium	lb.	.30	@	.35
dark	lb.	.32	@	.43
commercial	lb.	.12	@	—

Reds

Antimony crimson, 15/17% F.S.	lb.	.37	@	.40
sulphur free	lb.	.39	@	.50
golden, 15/17% F.S.	lb.	.19	@	.24
calcium and sulphur free	lb.	.40	@	—
red sulphuret 15/17% F.S.	lb.	.15	@	.16
Indian, English	lb.	.11	@	.13
Para toner	cwt.	1.00	@	1.10
commercial		.16	@	.18
Red Oxide, reduced	lb.	.08	@	.12
pure	lb.	.12	@	.14
Toluidine toner	lb.	2.10	@	2.25
Venetian red	lb.	.03½	@	.06
Vermillion, quicksilver, English	lb.	1.20	@	1.25
domestic	lb.	.25	@	.30

Whites

Albalith	lb.	.07	@	.07½
Aluminum bronze	lb.	.55	@	.60
Azolith	lb.	.07	@	.07½
Lithopone, domestic (factory)	lb.	.07	@	—
Zinc Oxide—American Process American Horse Head special	lb.	.07⅞	@	.08
XX red	lb.	.08	@	.08½
American Aso: ZZZ (lead free)	lb.	.07⅞	@	.08
ZZ (under 5 per cent leaded)	lb.	.07½	@	.07¼
Z (8-10 per cent leaded)	lb.	.07	@	.07¼
Zinc Oxide—French Process White seal	lb.	.12	@	—
Green seal	lb.	.10¾	@	—
Red seal	lb.	.09¾	@	—

Yellows

Chrome, light		.17½	@	.18
dark and medium	lb.	.17½	@	.18
Cadmium Sulphide	lb.	1.50	@	1.75
Ocher, French	lb.	.01¾	@	.03
domestic	lb.	.02½	@	.03

COMPOUNDING INGREDIENTS

Aluminum flake	ton	29.00	@	—
hydrate light	lb.	.18	@	.20
Ammonia carbonate,	lb.	.09¼	@	.10½
Barium carbonate,	ton	70.00	@	77.00
Barium Dust	lb.	.05	@	.06
Barytes southern off-color,	ton	15.00	@	18.00
Western, prime white	ton	25.00	@	26.00
Basofor	lb.	.04¾	@	—
Blanc fixe, dry f.o.b. works	lb.	.04	@	.04¼
Carrara filler	lb.	.01½	@	.02
Chalk, precipitated, extra light	lb.	.04¼	@	.05
heavy	lb.	.03¼	@	.04
Clay, China, domestic,	ton	15.00	@	16.50
Dixie	ton	22.00	@	32.00
Blue Ridge	ton	12.00	@	25.00
Fossil flour	ton	60.00	@	—
Glues, extra white	lb.	.30	@	.40
medium white	lb.	.20	@	.26
cabinet	lb.	.18	@	.28
cabinet low grade	lb.	.15	@	.18
common bone	lb.	.11	@	.15
Graphite flake, bbls.	lb.	.06½	@	.12
amorphous	lb.	.04	@	.10
Infusorial earth, powdered	ton	60.00	@	—
bolted	ton	65.00	@	—
Liquid latex	gal.	1.30	@	—
Mica, powdered	lb.	.15	@	—
Rotten Stone (powdered)	lb.	.02½	@	.04½
Soapstone, powdered	ton	15.00	@	20.00
Starch, powdered	cwt.	3.20	@	3.22
Talc, domestic	ton	15.00	@	18.00
French	ton	20.00	@	—
French, high grade	ton	40.00	@	—
Italian	ton	47.00	@	58.00
Terra Alba	cwt.	1.85	@	2.00
Tripoli, white	lb.	.02	@	.02¼
Whiting, commercial	cwt.	1.00	@	1.25
gilder's bolted	cwt.	1.10	@	1.25
English cliffstone	cwt.	1.50	@	2.50
Paris white American	cwt.	1.25	@	1.50
Quaker	ton	13.00	@	15.00
Wood pulp XXX	ton	35.00	@	—
" " X	ton	25.00	@	—
Zinc Oxide— lead free	lb.	.07¾	@	.08
5 per cent leaded		.07⅛	@	.07¼
10 per cent lead sulphate	lb.	.07¼	@	.07¾
20 per cent lead sulphate	lb.	.07¼	@	.07¾
35 per cent lead sulphate	lb.	.07¼	@	.07¾

(Also see whites)

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Granulated M.R.	ton	36.00	@	47.00
Hard hydrocarbon	ton	30.00	@	40.00
Soft hydrocarbon	ton	30.00	@	40.00
Pioneer M.R.	ton	42.00	@	44.00
320/340 M. P. hydrocarbon (c. l. factory)	ton	45.00	@	50.00
300/310 M. P. hydrocarbon (c.l. factory)	ton	40.00	@	45.00
Synpro, granulated, M. R. (factory)	ton	55.00	@	70.00

SOFTENERS

Acids

Acetic, 28 per cent	cwt.	3.38	@	3.63
Cresylic, 97%	gal.	.80	@	.90
95%	gal.	.74	@	.80
Muriatic, 20 degrees	cwt.	1.00	@	1.10
Nitric, 36 degrees	cwt.	4.50	@	5.00
Sulphuric, 60 degrees	ton	11.00	@	12.00
66 degrees	ton	15.00	@	16.00
Tartaric, crystals	lb.	.32½	@	—

Alkalies

Caustic soda, 76%	cwt.	3.10	@	3.16
Soda ash, 58%	cwt.	1.25	@	1.63

Oils

Castor, No. 3, bbls.	lb.	.13½	@	—
Chinawood, bbls.	lb.	.21¼	@	.21½
Corn, crude, bbls.	lb.	.11¾	@	—
refined	lb.	.12¾	@	.12⅞
Cotonseed,		9.62	@	—
Glycerine,	lb.	.17	@	.17½
Linseed, domestic	gal.	.84	@	.94
Palm, Niger	lb.	.07¼	@	.07⅜
Lagos	lb.	.07⅞	@	.07¾
Peanut, domestic, crude	lb.	.15	@	—
Petroleum, amber	lb.	.04½	@	—
dark, amber	lb.	.04	@	—
Pine, steam distilled	gal.	.65	@	—
Rapeseed, refined	gal.	.75	@	.76
blown	gal.	.90	@	—
Rosin, first rectified	gal.	.43	@	—
second refined	gal.	.46	@	.47
Tar, commercial	gal.	.30	@	—
Soya Bean		.10¾	@	.11

Resins and Pitches

Cumar resin, hard	lb.	.09	@	.10
soft	lb.	.09	@	.10
Parra M.R.	lb.	.06	@	.07
Tar Retort	bbl.	11.00	@	—
kiln burned	bbl.	11.00	@	—
Pitch, Burgundy	lb.	.05	@	.06
coal tar	lb.	.01½	@	.02
pine tar	lb.	.03	@	—
Rosin, grade K	bbl.	5.80	@	—
Shellac, fine orange	lb.	.90	@	—

Solvents

Acetone, drums	lb.	.25	@	—
Alcohol, denatured, No. 1 bbls.	gal.	.47½	@	.49½
Benzol, tanks	gal.	.23	@	.28
Benzol, 90%	gal.	.21	@	.26
pure	gal.	.26	@	.30
Carbon bisulphide,	lb.	.06½	@	.07
Tetrachloride	lb.	.09	@	.10½
Dimethylaniline	lb.	.41	@	.43
Motor gasoline, steel bbls.	gal.	.15½	@	—
Naptha, V. M. & P.	gal.	.14½	@	—
Toluene		.26	@	.28
Turpentine, spirits	gal.	.97½	@	—
wood	gal.	.75	@	—

Waxes

Bayberry	lb.	.26	@	.27
Beeswax	lb.	.40	@	.42
Carnauba, No. 1	lb.	.36	@	.40
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.06	@	.06½
Ozokerite, black	lb.	.23	@	.24
green	lb.	.27	@	.28
Paraffine	lb.	.03	@	.03¼
Phenol	lb.	.28	@	.30
Sweet wax	lb.	.10	@	.12

SUBSTITUTES

Black	lb.	.09	@	.14
White	lb.	.10	@	.16
Brown	lb.	.10	@	.15
Brown factice	lb.	.09½	@	.13
White factice	lb.	.08½	@	.15

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.21	@	.22
Sulphur Chloride (drums)	lb.	.06	@	.07
Sulphur flour Commercial, (bags)		1.35	@	1.70
Superfine		2.00	@	2.40
Bergenp't brand (bags)	cwt.	2.45	@	2.75
(bbls.)	cwt.	2.70	@	3.25

Chemicals

Litharge—Some deliveries are being made on contract but little demand exists for spot. Prices firm at 10.40 cents a pound in casks.

Lithopone—Fairly active with diminishing stocks in hands of producers. No curtailment in production. Expect heavy consumption in spring. Despite foreign competition prices for domestic are holding firm at 7c per pond in bags.

Zinc Oxide—Interest is being shown by the tire manufacturers but no large demands are being made for the oxide. Prices are firm and are quoted at 9¾c for French and 8c for domestic.

Barytes—Foreign competition is keen despite continued firmness in prices for domestic barytes. In some quarters $24 and $25 quotations have been made, according to foreign manufacturers but there is little to substantiate this claim. On a whole the market is unsettled with interest being shown by rubber manufacturers.

Blanc Fixe—Market firm and steady with good business for the year. Dry is still quoted at 0.04 to 0.04¼.

Carbon Black—Demand has been fair but not enough to take care of the production of blacks. Some producers are said to have quoted under 8 cents. Foreign manufacturers expect lower prices here and may hold back their stocks awaiting higher quotations.

Gasoline and *Naphtha*—The price decline in the past few weeks has now brought the motor gasoline down to 15½ cents a gallon in steel bbls. and the naphtha down a cent to 14½ cents.

Talc—Consumption is good with large imports announced. Prices firm at $15 @ $18 a ton.

Caustic Soda—Contract withdrawals are very large with shipments taxing producers to the utmost. Demand has picked up in many quarters even the spot market showing increased activity in small lots. This augurs well for 1924. Contracts for next year are being made freely with last year's business already eclipsed. Prices firm at $3.10/100 pounds for 76 per cent caustic.

Benzol—Demand has been very good in the past month with large deliveries being made. Stocks have dwindled. Prices are low and some users are stocking for next year. The low stocks have caused a strengthening tone in the market and an increase in price is expected. Quotations are 0.21 @ 0.26 gal.

Acetic Acid—Little demand with routine buying.

COTTON CROP ESTIMATE

A. Norden & Company presents hereunder its annual estimate of the American cotton crop. For the past several years this concern has attained notable accuracy in making its crop forecasts. The figures are running bales, two round bales counted as one, and lint cotton only, linters excluded:—

North Carolina	1,000,000 Bales
South Carolina	775,000 "
Georgia	600,000 "
Alabama	625,000 "
Mississippi	650,000 "
Louisiana	350,000 "
Texas	3,900,000 "
Oklahoma	575,000 "
Arkansas	650,000 "
Tennessee	250,000 "
Sundries	375,000 "
Total	9,750,000 Bales

Scrap Rubber

NEW YORK, Nov. 16, 1923

The scrap rubber market continues to present a spotty appearance with the list of prices undergoing minor mixed changes from day to day. Reclaimers are manifesting a slightly keener interest in some items such as tire peelings, boots and shoes and tubes but their individual commitments remain small. Leading dealers are not anticipating much improvement in buying before the start of the new year when the seasonable expansion of factory operations should begin. Scrap trade sentiment has benefited from the partial recovery in crude since our last report, but the effect on prices has been negligible.

Auto tire peelings	.01	@	.01¼
Standard White auto ....ton	18.00	@	20.00
Mixed auto .....ton	13.00	@	15.00
Bicycle tires .....ton	14.00	@	16.00
Clean solid truck tires	.01	@	.01¼
Arctics, trimmed	.02	@	.02¼
Inner tubes, No. 1	.04	@	.04¼
Inner tubes, compounded	.03	@	.03¼
Inner tubes, red	.03	@	.03¼
Battery jars, clean hard rubber	.02	@	.02½
Rubber Hose	.00⅞	@	.01
Red packing	.01	@	.01¼
White druggist sundries	.04	@	—
Boots and shoes	.02¾	@	.03
Arctics, untrimmed	.01¾	@	.02

Reclaimed Rubber

NEW YORK, November 15, 1923

Activity in the movement of crude rubber has tended toward a better tone for reclaims in the past two weeks. Demand has been good and a number of satisfactory sales have been recorded. Inquiries have been fair and reclaimers expect good business for some time to come. A rise in prices is expected and those manufacturers who are in a position to do so should contract for a considerable supply. Prices quoted today are as follows:

Floating Tube	.15⅛	@	.15½
Friction	.21½	@	.22½
Boots and Shoes (unwashed)	.10	@	.10¼
Boots and Shoes (washed)	.13	@	.13½
Mechanical	.09½	@	.10½
Hose	.10	@	.11
Tires, truck	.08¼	@	.08¾
Tires, auto, black	.09	@	.09¼
Black (washed)	.11	@	.11¼
White	.13	@	.13¼
Dark Grey	.10	@	.10½
Light Gray	.11	@	.11½

Crude Rubber

NEW YORK, November 15, 1923

Since our report of two weeks ago the market for crude has been active with interest being shown by manufacturers. Increased production on the part of a number of tire manufacturers has resulted in a considerable number of inquiries and a fair tonnage of rubber has been turned over in the past few days.

Following the lead of the London market, spot prices advanced about ½ cent recently with a further increase expected. One authority has already predicted a sharp rise in prices for 1924 and this opinion is also held by a number of dealers and brokers. It is pointed out that the visible supply will be no greater next year but that demand is increasing and the law of supply and demand will force prices up.

Buyers are still below sellers on prices and a number of American manufacturers have appeared in the London and Singapore markets. This resulted in a slight increase which was reflected in the local quotations.

The announcement that the allowable percentage of exports from Ceylon and Singapore remains unchanged at 60% for the next quarter is looked upon with favor by the growers for it is felt that an additional 5% thrown on the market at this time would serve to nullify any recent advances.

Manufacturers of tires have increased their production schedules in anticipation of next year's business and have come in the market for stocks. But in very few instances have they been willing to deal in anything except spot rubber. One large manufacturer took a fair tonnage last week but on the whole buying has been spotty.

Today's quotations are as follows:

Plantations			
First Latex, spot	.27¾	@	.28
Ribbed Smoked Sheets	.27¼	@	.27½
Dec.-Jan.	.27⅜	@	.28
Jan.-March	.27⅝	@	.28
Apr.-June	.28⅛	@	.28¼
Amber Crepe No. 1, spot	.26	@	.26¼
Amber Crepe No. 2, spot	.25½	@	.26
Amber Crepe No. 3, spot	.25	@	.25¼
Light Clean Thin Brown Crepe	.25¼	@	.25½
Commercially Clean Thin Brown Crepe	.25	@	.25¼
Specky Brown Crepe	.24¾	@	.25
Roll Brown Crepe, spot	.25	@	.25¼
Paras			
Madeira Fine	.25	@	.25¼
Acre Fine	.24	@	.24¼
Up-river Fine	.23¾	@	.24
Up-river Medium	.21	@	.21¼
Up-river Caucho Ball (shipment)	.20½	@	.20⅝
Up-river Coarse	.19½	@	.20
Islands Fine	.21	@	.21½
Cameta	.11½	@	.11½
Xingu Ball	.19½	@	.19¾
Pontianac			
Prime Pressed	.11	@	.12
Plantation	.07½	@	—
Bangermassin	.07	@	.08
Siak Gutta Percha	.18	@	.19
Prime Macassar	3.00	@	—
Balata			
Surinam Sheets	.80	@	.85
Columbia Block	.60	@	.65
Venezuela Block	.70	@	.75
Guayule, washed and dried	.28	@	—

Rubber Patents

GRANTED OCT. 30, 1923

1,472,033. Sun-Sheltering Cover for Pneumatic Tires. Harley C. E. Anderson, North Vancouver, British Columbia, Canada.

1,472,053. Mold for Rubber Goods. Gheron Davis, New York, N. Y.

1,472,160. Dust Cap for Tire Valves and The Like. Albert Fessler, High Bridge, N. J.

1,472,185. Vulcanizing Apparatus. Elmer A. Mollenhauer, Spokane, Wash.

1,472,256. Means for shaping Rubber Articles. George S. Stringfield, Columbus, Ohio.

1,472,271. Armored Pneumatic Disk Wheel. William G. Hawkins and Vivian C. Bloodgood, Harvey, Ill., assignors of one-third to Frederick P. Hawkins, Chicago, Ill.

1,472,330. Waterproof Garment. Walter L. Fry, New Rochelle, N. Y.

1,472,383. Tire for Wheels of Road Vehicles. William Charles Bilham, Southampton, England.

1,472,435. Inner Tube for Pneumatic Tires and Method of Making the same. John F. Palmer, St. Joseph, Mich.

1,472,521. Building Element. Marion M. Harrison, Akron, Ohio, assignor to The Miller Rubber Company, Akron, Ohio, a Corporation of Ohio.

1,472,556. Tire-Handling Device. Granvil F. Dallas, Knoxville, Tenn.

1,472,576. Fountain Pen. William H. Averill, Boston, Mass., assignor of one-half to Arthur C. Erisman, Brookline, Mass.

1,472,756. Method of Manufacturing Inner Tubes for Vehicle Tires. Albert Ennis Henderson, Toronto, Ontario, Canada.

1,472,764. Tire-Wrapping Machine. John Scherner, Milwaukee, Wis., assignor to The Fisk Rubber Company, Chicopee Falls, Mass., a Corporation of Massachusetts.

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1,472,881. Method and Apparatus for Molding Tire Casings. Thomas Midgley, Hampden, Mass., assignor to The Fisk Rubber Co., Chicopee Falls, Mass., a Corporation of Massachusetts.

1,472,903. Cushion Tire and Manufacture Thereof. Laurence R. Davis, Weehawken, N. J., assignor to Providence Rubber Company, a Corporation of Rhode Island.

1,472,913. Pneumatic Tire. Peter Jones, Wigan, England.

1,472,986. Cushion Tire. Joseph E. Mackay, San Francisco, Calif.

1,473,032. Dust Cap. Abraham L. Freedlander, Dayton, Ohio, assignor to The Dayton Rubber Manufacturing Co., Dayton, Ohio, a Corporation of Ohio.

1,473,171. Pressure Gage. Junius A. Bowden, Los Angeles, Calif., assignor to A. Schrader's Son, Incorporated, Brooklyn, N. Y., a Corporation of New York.

1,473,178. Pneumatic Toy. Walter R. Dray, Chicago, Ill.

1,473,184. Tire Patch. Truverton J. Jackson, Columbus, Ohio.

1,473,270. Cushion Tire. Van L. Wilson, Boise, Idaho.

1,473,285. Rubber Composition and Method of Making the Same. Harry L. Fisher, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N. Y., a Corporation of New York.

1,473,397. Tire Remover. Arthur Boock, Tripp, S. Dak.

1,473,414. Resilient Tire. John M. Abrams, Brooklyn, N. Y.

1,473,492. Packing. Charles I. E. Mastin, Midland Park, N. J.

1,473,502. Resilient Tire. Charles Edward Murray, Jr., Trenton, N. J.

1,473,525. Demountable-Rim Construction. Joseph G. Swain, Akron, Ohio, assignor to The Firestone Steel Products Company, Akron, Ohio, a Corporation of Ohio.

1,473,565. Wheel Tire. Klaas Frederik Konig, The Hague, Netherlands.

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1,473,623. Tire Mounting. William T. Gulledge, Matthews, N. C.

1,473,662. Tie Press. Alfonso A. Banks, New York, N. Y.

1,473,680. Tire Attachment. Charles C. Marble, Bradentown, Fla.

1,473,768. Reenforced Ribbed Pneumatic Tube. Louis W. Hottel, Chicago, Ill.

1,473,938. Valve Protecting and Operating Device for Pneumatic Tires. William R. Royer, Wilkes-Barre, Pa.

1,474,011. Self-Sealing Tire Tube. Harley H. Allyn, Atlantic City, N. J.

1,474,085. Inner Tube. John Ruy Meredith, Atlanta, Ga.

1,474,099. Automatic Tire-Pressure Gage. Raymond L. Whipple, David P. Rockwell, and Chase C. Featherstone, Lehi, Utah.

1,474,139. Device for Locking Demountable Tire-Carrying Rims to Road Vehicles, etc. Ernest Alfred Bradshaw, Cecil William Sim Black, and Arthur Percival Nicolls, North Sydney, New South Wales, Australia.

1,474,149. Process and Apparatus for Manufacturing Tire Casings. Ernest Hopkinson and John P. Coe, New York, N. Y.; said Coe assignor of his entire right to The Hartford Rubber Works Company, a Corporation of Connecticut.

1,474,160. Tire Valve. Francis E. Nugent, Philadelphia, Pa.

1,474,286. Hard-Rubber Flush Ball for Water-Closet Tanks. Julius Phillips, Trenton, N. J., assignor to the Luzerne Rubber Company, Trenton, N. J., a Corporation of New Jersey.

Firestone Enters Patent Disclaimer

1,288,733.—*William C. Stevens*, Akron, Ohio. TIRE-OPENING MACHINE. Patent dated Dec. 24, 1918. Disclaimer filed Oct. 25, 1923, by the assignee, *The Firestone Tire & Rubber Company*.

Hereby enters this disclaimer—

"To that part of the claims in said specification which is in the following words, to wit:

"1. In a machine for the purpose set forth, the combination of two members adapted to enter the edges of a tire casing and mechanism to separate said members.

"2. In a machine for the purpose set forth, the combination of a finger adapted to enter between the edges of a tire casing, a second finger likewise adapted to enter between the edges of the casing and means to move one of said fingers relative to the other to hold the edges of the casing separated.

"4. In a machine for the purpose set forth, the combination of a series of arms arranged in a circle, fingers on the ends of said arms projecting outwardly of said circle, a second series of arms, fingers on the ends of said second arms normally located adjacent said first named fingers, and means for moving one of said series of arms to separate the fingers.

"6. In a machine for the purpose set forth, the combination of a series of arms arranged in a circle, fingers on the ends of said arms projecting outwardly of said circle, a second series of arms, pivotal mountings for said second named arms, angular portions at the ends of said second named arms, fingers on the ends of said angular portions adjacent to and extending in the same direction as said first named fingers, and means for moving one of the sets of arms to separate the fingers."

New Incorporations

DELAWARE

Overland-Haller Corp, Dover. To deal in rubber and rubber substitutes, $200,000.

Seiberling Rubber Co., Wilmington. 50,000 shares preferred stock, $100 each; 500,000 shares common stock, no par value.

Goodyear Rubber Plantations, Inc., Wilmington. $6,615,000.

KENTUCKY

David D. Bakrow & Son, Louisville. $75,000. Incorporators: R. D. and J. G. Bakrow, Julius Laszinsky. To manufacture balloons.

MASSACHUSETTS

Ceylon Rubber Products Co., Boston. $50,000. A. W. Faulkner, A. H. Holbrook, L. E. Flye.

Riddock Rubber Co., Malden. $250,000. Chas. Riddock, C. C. Pierce, Stella Levens.

MISSOURI

Rubberstone Rubber Mnfg. Co., Kansas City. $125,000.

B. J. Mullikin Tire Co., St. Louis. $250,000.

OHIO

Republic Rubber Co., Youngstown. Changed from 50,000 shares to 5,000 shares, no par value.

Marston Rubber Co., Dayton. $10,000. C. C. Marston, O. R. Keiser.

Akron Rubber Mat Co., Akron. $2,000. J. R. Bailey, H. W. Limbert, F. J. Gostlin, T. C. Bailey and Mrs. Elizabeth Gostlin.

Marion Insulated Wire and Rubber Co., Marion. $25,000 preferred stock.

VIRGINIA

Dawson-Goddin Rubber Co., Inc. Richmond. $3,000 to $15,000. H. M. Dawson, Pres.; Leonard Whitten, Sec.; G. W. Goddin and G. H. Whidden. To deal in rubber goods and auto supplies.

Trade Marks

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RINGPAK—No. 170,717. General Asbestos & Rubber Co., Charleston, S. C. Seal and compensating means for piston rings.

GRANGERS BERKSHIRE — No. 182,242. Grangers Manufacturing Co., Boston, Mass. Whiting for the rubber trade.

GRANGERS STOCKBRIDGE — No. 182,243. Grangers Manufacturing Co., Boston, Mass. Whiting for the rubber trade.

A-19 RUBBER SERVICE LABORATORIES—Trade mark consists of a double curved triangle with A-19 in the center of the inner triangle and the balance of the name between the inner and outer triangles, one word on each side. No. 182,998. The Rubber Service Laboratories Co., Akron, Ohio. For compound used in the curing of rubber articles, said compound being produced by the interaction of aldehydes and amines.

LINSMENT—No. 183,279. General Paint & Varnish Co., Chicago, Ill. Varnish for the cementing of rubber tiles.

Not subject to opposition.

GRANGERS SUPERFINE — No. 175,222. Grangers Manufacturing Co., Boston, Mass. Whiting for the rubber trade.

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S BILTMORE SPECIAL—No. 168,454. Cuthbert S. Buchart Co., Inc., Rye, N. Y. For golf balls.

WILSON SUCCESS 1.62—No. 182,948. Thos. E. Wilson & Co., Chicago, Ill. For golf balls.

THE PINEHURST W—No. 182,94. Thos. E. Wilson & Co., Chicago, Ill. For golf balls.

THE HOUSE OF BALLOONS, on a curved line with representation of a crown in a circle between the words "house" and "of" and the name of the company above.—No. 184,063. William Caldwell, doing business as the Rex Rubber and Novelty Co., New York, N. Y. For rubber balloons, rubber dolls and rubber squawkers.

Not subject to opposition.

JUST A REAL GOOD TIRE—No. 175,695. Associated Tire Stores Corp., New York, N. Y. assignors to Century-Plainfield Tire Co., Plainfield, N. J.

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Representation of half a belt fastener, the trade mark consisting of the number, shape and arrangement of the rivets.—No. 163,553. Teuscher & Son Machinery Supply Co., St. Louis, Mo. Automobile Fan Belts made of either fabric or rubberized fabric.

TOMAHAWK BRAND — No. 163,975. The Grasselli Chemical Co., Cleveland, Ohio. For Zinc Oxide.

SNOWCAP BRAND—No. 163,976. The Grasselli Chemical Co., Cleveland, Ohio. For Zinc Oxide.

TOMAHAWK — No. 186,226. The Grasselli Chemical Co., Cleveland, Ohio. For Zinc Oxide.

HOWER, vertical letters in a conventionalized wing design — No. 169,854. Harry C. Hower, Chicago, Ill. For Pneumatic Tires and tubes.

THE BOSS FROM LA CROSSE—No. 177,850. La Crosse Rubber Mills Co., La Crosse, Wis. For Rubber heels for shoes, rubber soled and heeled shoes and leather shoes.

SPUR—No. 178,845. Holtite Manufacturing Co., Baltimore, Md. For Rubber heels for shoes.

TROUSER-CREASE—No. 181,472. A. J. Bates Co., Webster, Mass. Shoes and parts thereof composed of leather, rubber, canvas and combinations thereof.

G/A—No. 181,487. Hurley Shoe Co., Rockland, Mass. For shoes of leather, rubber and fabric; leather and rubber; leather and fabric, and rubber and fabric.

I. MILLER—No. 182,001. I. Miller & Sons, Inc., Brooklyn, N. Y. For shoes, slippers and boots of leather, rubber, fabric, leather and rubber, leather and fabric, or rubber and fabric.

ADMIRAL—No. 183,017. The Admiral Tire & Rubber Co., Coshocton, Ohio. Inner tubes, pneumatic tires, cord tires and fabric tires.

SULZIN—No. 183,760. Tom Hartley Roberts, Reigate, England. For chemical substances used in connection with the vulcanization of rubber.

COMFORT—No. 184,413. Michelin Tire Co., Milltown, N. J. For automobile tires including both outer casings and inner tubes.